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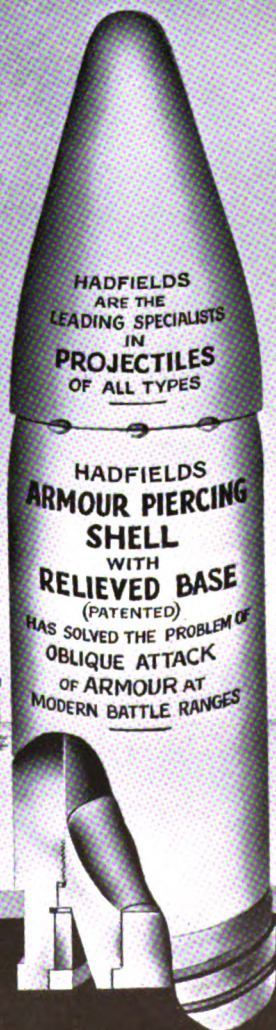
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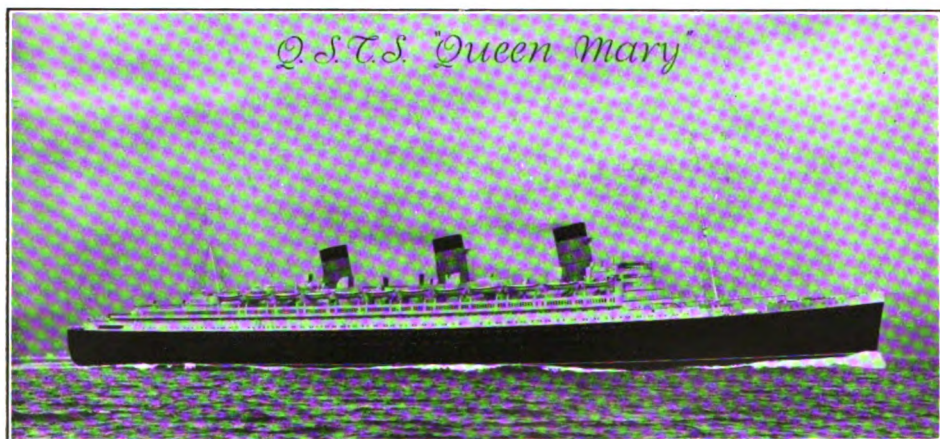
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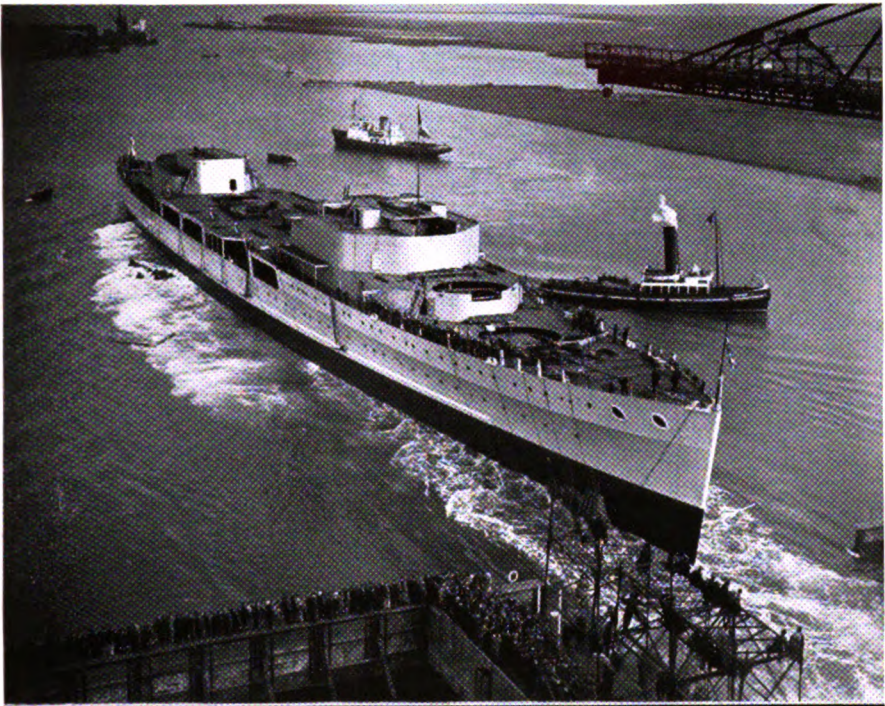
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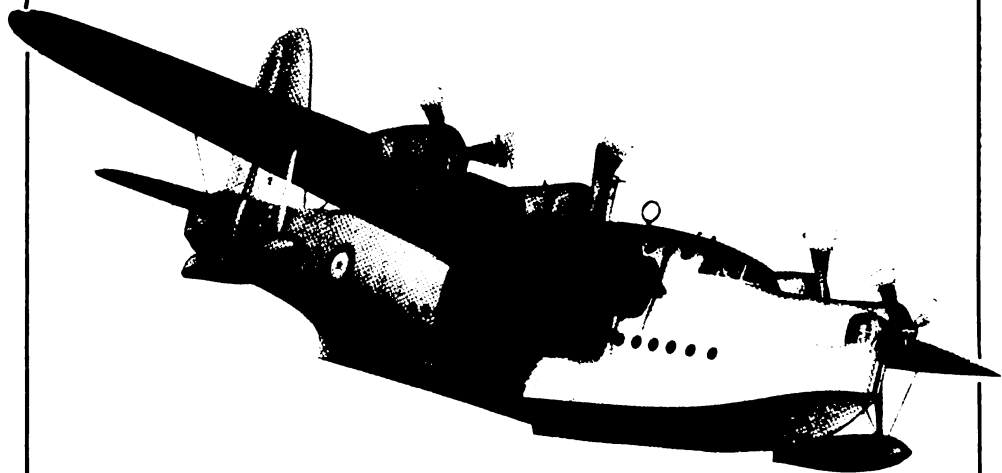
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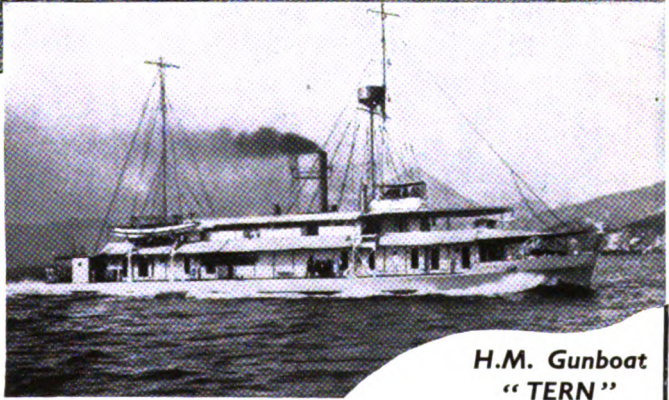
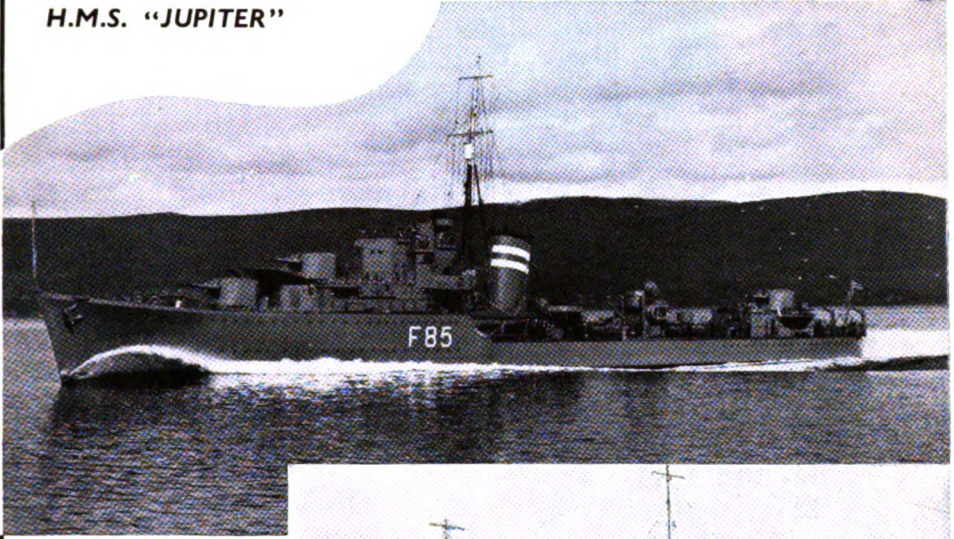
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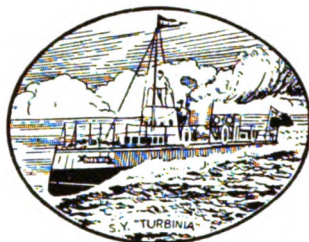
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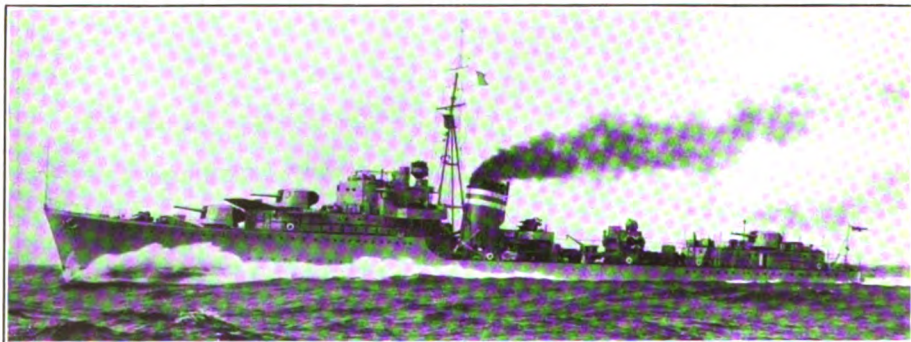
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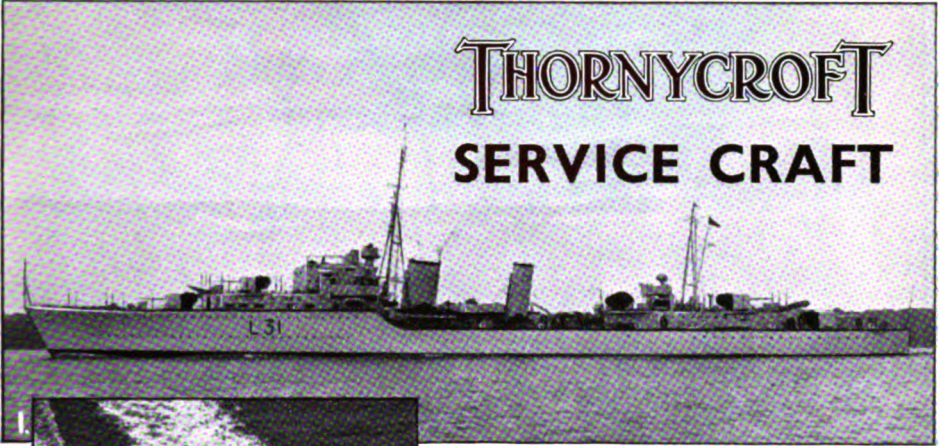
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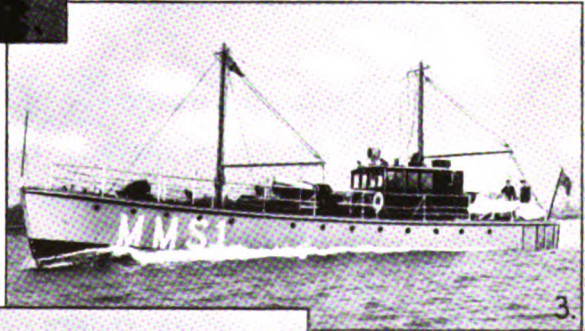


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TO VVVV
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PREFACE.

"BRASSEY'S NAVAL ANNUAL" makes its appearance this year as far as may be in its usual form, but some modification has been unavoidable. In time of peace it has from the first comprised, besides a Reference Section containing material details of the ships which compose the world's navies, a letterpress section containing a chronicle of the year's events as far as the British Navy was concerned, reviews of the material development of navies generally, and a series of articles commenting on various aspects of naval strategy and naval warfare, treated—as they inevitably must be in time of peace—chiefly from the abstract point of view.

In time of war, these matters pass from the realm of the abstract into the concrete, and "Brassey's" commentary, from being in the form of speculation upon possibilities, develops into a chronicle of actual events. In this number one chapter, from the pen of Dr. Herbert Rosinski, who has made a special study of the development of strategic thought in the German Navy, deals in a very illuminating manner with the enemy's theories of war which are—or are not?—being now put into practice. Sir Archibald Hurd writes on a subject on which he is an acknowledged authority, the Merchant Navy, and Commander Pursey contributes a special study of the progress of the submarine campaign as it developed up to the end of 1939.

The reviews of the development of material, on the other hand, survive in their accustomed form, so far as information on the subject is available to the public. Captain Altham, who for many years has regularly contributed the chapter on foreign navies, being now otherwise occupied, I have been fortunate in securing the assistance of Mr. F. E. McMurtrie, whose knowledge of this subject is unrivalled and encyclopædic, to replace him. I am also indebted to Mr. E. McCallin, who has undertaken the revision of the Reference and Diagrammatic Sections. It must be realized, of course, that less information on material developments is available to-day than hitherto. None has been made public by any of the belligerents since the outbreak of war, and indeed even before that an increasing degree of secrecy in these matters had been manifested in many countries, particularly Germany, Russia, and Japan.

For this reason I have this year omitted both the Tables of Comparative Strength and the chapter dealing with the same subject. In the incomplete state of information on the subject which is public property, detailed figures might well be so inaccurate as to be misleading. It would have been possible to strike some sort of a balance at the date, say, of the outbreak of war; but even that would not have been reliable, and by now would have been so much out of date as to be useless.

In the current number, too, I have abandoned the distinction, adopted some years ago, between the Naval Section and the Naval Air Section of the letter-press. Air operations at sea have become so integral a part of Naval operations that the distinction is no longer the reality it was when it was adopted by my predecessor. I welcome Major Oliver Stewart as a highly authoritative commentator upon air operations and on air matters generally. The effect of all these modifications has been to reduce, to some extent, the size of this volume.

A word of explanation appears desirable regarding the date of publication. For several years it has been the practice for "Brassey" to go to press early in the New Year, but to be published only after the presentation of the Navy Estimates to Parliament in March, in order that the current volume should contain the Estimates for the year of publication. This procedure dictated publication in April, the three months' gap in the chronological survey being bridged by an introductory chapter added just before publication. It was intended this year to adhere to this plan. Late in February, however, when it was announced that there would be no publication of Navy Estimates this year, it was then too late to advance the date of publication; it was found possible, however, to carry the "Naval Chronicle" chapter up to the beginning of March, and thus obviate the necessity for an introductory chapter.

I have to acknowledge gratefully the assistance very readily accorded to me by the Naval Attachés in London of France, the United States, Japan, Italy, the Netherlands, the Secretaries of the Norwegian and Spanish Legations, and the Naval Agent for the Brazilian Admiralty. They have been exceedingly kind in replying to my queries and in supplying me with information for which I have asked. I have also to acknowledge with thanks the receipts of "Almanacco Naval" and "Les Flottes de Combat" from their respective editors. It is to my great regret that the exigencies of his wartime activities have deprived me of the able assistance of Mr. G. H. Hurford, which has been at the disposal of the editors of "Brassey" for so many years.

H. G. THURSFIELD.

REVIEW OF 1939

CHAPTER I.

A NAVAL CHRONICLE.

I. PRE-WAR.

At the end of 1938, as was noted in the concluding words of the Introduction to the last issue of "Brassey," it was clear that, despite the terrific financial burden of modern armaments, there was no alternative for this country but to bring its defences fully up to the standard demanded by the state of a world disturbed in both hemispheres. As the year progressed, it became increasingly evident that these measures were no longer mere precautions; they developed into active preparation for the conflict which would be forced upon any European nation which, valuing freedom and the decencies of civilisation, was not prepared to submit to domination by Hitler and his bullies. On March 15 Hitler repudiated all his fair promises of Munich and annexed Bohemia and Moravia, thus obliterating Czecho-Slovakia. The spies and torturers of the Gestapo were thereupon let loose upon what had been one of the most enlightened of free democracies, as if to warn others of what their fate would be in their turn. At once the batteries of Dr. Göbbels' Propaganda Ministry—sure presage of the next campaign—were turned upon Poland, the alleged sufferings of Danzig replacing those of the Sudeten Germans as the ostensible cause for Germany's disinterested championship. The date of the "summer manœuvres" of the German Army, for which, of course, full mobilisation was necessary, showed when Hitler's next aggression was due. That set the pace for British rearmament. If Hitler were really determined to pursue his course of domination, the testing time would come in the late summer. No time could be lost in preparing to develop the Fighting Forces on the scale demanded by war; and those which were in existence must be at the height of preparedness at the time of year usually given over to holidays. That was the programme into which the British Government was forced by events, and that programme gives the key to the following chronicle of naval events of the year. The present chapter deals with those up to the outbreak of war only.

THE KING AND THE NAVY.

THE CANADIAN VISIT.

H.M. the King spent much time with the Navy during the year. It had been arranged that Their Majesties, when they visited Canada in the early summer, should make the journey in H.M.S.

Repulse, and the Admiral's quarters in that ship were specially fitted to accommodate them and their suite. Recent alterations made in the ship for the mounting of extra anti-aircraft guns had made possible the provision of the extra cabins needed for the latter without detracting from the fighting value of the ship. There was, however, a certain amount of uninstructed clamour against detaching so important a unit of the fleet as the Repulse—her sister ship the Renown was still under reconstruction and therefore not available for service—at a time when the international situation was so disturbed. There was little substance in the complaint, since it was based on the supposition—for which there was very little basis—that strategically the Repulse would be badly placed in Canada should war break out, and it ignored the considerations that in her, if necessary, Their Majesties could get back to England in four days, and that, if a sudden emergency should find them afloat, they could not be more safely situated than on board the Repulse. The clamour, however, having spread to Parliament, the Government yielded to it. In April, much to the disappointment of the Navy, the Prime Minister announced in Parliament the decision to retain the Repulse at home and to use the liner Empress of Australia, of the Canadian Pacific Line, for Their Majesties' conveyance. The choice, which was largely governed by the fact of what liners were available, was appropriate in every way but one—the Empress of Australia had started her existence as a German ship!

On May 6 Their Majesties, in accordance with precedent, embarked at Portsmouth. The Empress of Australia was escorted by the cruisers Southampton and Glasgow of the 2nd Cruiser Squadron—Rear-Admiral Edward-Collins flying his flag in the former—and the Repulse. Vice-Admiral Sir Dudley North, Commanding His Majesty's Yachts, was in attendance on the King, and was also in command of the liner and escort. As they left Spithead, Their Majesties were saluted by aircraft of the shore-based Coastal Command of the R.A.F.

As the Royal Squadron cleared the Isle of Wight and turned westwards down channel, they were met by the Home Fleet, under the Commander-in-Chief, Admiral Sir Charles Forbes, with his flag in the Nelson, in two lines. The fleet fired a Royal salute of 21 guns and ships were manned as the Southampton, leading the Royal Squadron, entered the lines. At the same moment, they all reversed their course by turning outwards and then closed in together at 18 knots, to turn up parallel to the King's ship when two cables away on either hand. When the rear ships of the fleet came abreast of the Empress of Australia, the fleet eased down to 10 knots and the Royal Squadron, with the Repulse bringing up the rear, increased to 18 knots. Their Majesties were cheered by each ship as they passed, another Royal salute was fired as they cleared the fleet, and they steamed away into the declining sun on the first stage of their long voyage.

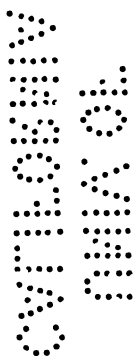
The Repulse accompanied Their Majesties for three days and then parted company to return home. There was half a gale blowing when she left, with a heavy sea, so that boat communication between



A WINTRY VOYAGE.

The King and Queen on board the Empress of Australia off the Banks of Newfoundland, May, 1939.

("The Times," photograph.)



the ships was impossible. But the Empress of Australia dropped a cask containing Their Majesties' mail for despatch and a series of Press photographs which had been taken on board, which the Repulse picked up and brought home. Two days later, persistent fog and ice compelled the squadron to slow down, with the result that their arrival was late, and the early days of their American programme had to be correspondingly curtailed. The substitution of a 19-knot liner for a 30-knot battle cruiser had, of course, extinguished the margin allowed for delays caused by weather on the voyage, and when this proved unkind throughout, there was no method of avoiding delay.

The weather was equally unkind on Their Majesties' return, for low visibility caused the cancellation of the Home Fleet's reception of welcome to them. It was to have been on the same lines as their send-off, and it was a matter of great disappointment in the Fleet that it could not be carried through according to programme.

THE KING AT GREENWICH.

On July 11 the King graciously consented to mark the occasion of the restoration of the Painted Hall to its original purpose as the Dining Hall of the Royal Hospital, for which it had never actually been used, by dining there.

The Painted Hall was designed by Wren with the intention that the officers should dine at the high table on the dais, the pensioners at long tables in the body of the hall. It was completed in 1704, but was closed from 1708 to 1727 while the ceiling and end wall at the high table end were being painted by Sir James Thornhill. It was then opened, but was used only on rare occasions. The bodies of both Nelson and Collingwood lay in state there while awaiting burial. In 1824 the lower windows were built up, and the hall was used as a picture gallery of sea paintings, most of them contributed from the Royal collection at Windsor. That use continued until 1937, when the pictures, and the Nelson relics which had also been on exhibition there, were transferred to the new National Maritime Museum, where they could be hung to much better advantage.

Since 1937 the Hall had been under restoration to its original condition. The officers of the Royal Naval College, who, in 1873, succeeded the pensioners as the occupants of the hospital buildings, now possess as noble a dining hall as any in the country.

The King was accompanied by the Duke of Kent and attended by the Commander-in-Chief at the Nore. He made the journey by river in the new Royal barge, and was received on arrival at Greenwich by the members of the Board of Admiralty and civic authorities from the town. Before dinner he knighted the Admiral President of the College, Vice-Admiral C. F. Kennedy-Purvis. The occasion was private, and His Majesty spent the evening mixing freely with the officers of the College, leaving only after midnight when, as the tide no longer served at the steps, he returned to London by car.

A SUMMER CRUISE.

In July, Their Majesties, with the Princesses, went by train to Weymouth—the first time since the days of George III that a reigning monarch with his family had visited that ultra-Royal town. There, after a civic welcome, they embarked in the Royal yacht and went in it to Dartmouth, arriving there the following morning—a Saturday. The King revisited all the scenes he had himself known as a naval cadet and inspected the cadets. The Royal party planted the appropriate trees and stayed until Sunday evening, when the yacht returned to Cowes. On the Monday afternoon they returned to London.

INSPECTION OF RESERVE FLEET.

On August 9 His Majesty interrupted his stay at Balmoral in order to inspect the Reserve Fleet, assembled in Weymouth Bay, before leaving for the exercise cruise which was to precede the Fleet exercises for which it had been mobilised. He arrived at Weymouth by train at 10 a.m., and at once went on board the Royal yacht *Victoria and Albert* in Portland Harbour, embarking from Bincleaves Pier. There he received the Board of Admiralty and the principal officers of the Fleet and establishments at Portland. A notable guest on this occasion was the Commander-in-Chief of the French Navy, *Amiral de la Flotte* F. Darlan.

The King then went on board several ships of the Fleet, beginning with the aircraft carrier *Courageous*, Captain W. T. Makeig-Jones, whose capacious decks provided space for detachments of men, 1,500 in all, from the many ships which His Majesty could not visit individually. Thence he went to the cruisers *Effingham*, flagship of Vice-Admiral Sir Max Horton, Commanding the Reserve Fleet, and *Cardiff*, the flotilla leader *Exmouth*, the submarine *Otway*, and the minesweeping trawler *Myrtle*. After a luncheon party in the Royal yacht, His Majesty spent two hours in the barge, attended by motor torpedo boats ahead and astern, steaming through the Fleet and passing close by every ship in it, before landing to return to Scotland by train. At the end of his inspection, the following signals were exchanged, and the order was given to splice the main brace.

From the King to the Vice-Admiral Commanding Reserve Fleet.

Please convey to all ranks and ratings what a great pleasure it has been to me to inspect the Reserve Fleet under your command.

The bringing forward for sea service of so many ships in a few days proves how smoothly the organisation works. The efficiency and smartness obtained in such a short time can only have been achieved by the enthusiasm and whole-hearted co-operation of all hands, and it leaves no doubt in my mind that the Fleet will quickly reach a high standard of fighting efficiency.

I realise what sacrifices are being made by many of the retired officers, pensioners, and reservists in leaving their work and their homes to make possible this quick and important addition to our naval strength. To all the Reserve Fleet I send my hearty congratulations and good wishes.

Reply from Sir Max Horton.

Vice-Admiral Commanding Reserve Fleet with humble duty has the honour to thank your Majesty, on behalf of all under his command, for your Majesty's gracious

message. All officers and men are deeply sensible of the honour which your Majesty has done them by journeying especially from Scotland to inspect the Reserve Fleet and your Majesty's visit will encourage them to give of their best to the task of bringing their ships to a high state of fighting efficiency.

The Fleet inspected, besides the Effingham, flagship of the Vice-Admiral, and the aircraft carriers Courageous and Pegasus, consisted of 16 cruisers in four squadrons, 55 destroyers in seven flotillas, 9 submarines in two flotillas, 2 escort vessels, 3 patrol vessels, 7 minesweepers, 11 trawlers, 5 M.A.S. boats, 3 motor torpedo boats, and 2 tugs. With these vessels were anchored the battleships Ramillies, Revenge, and Iron Duke.

THE ROYAL FAMILY AND THE NAVY.

The Duke and Duchess of Gloucester visited Plymouth in February, on a visit to the new cruiser Gloucester before her departure to hoist the flag of the Commander-in-Chief, East Indies. The Duchess had launched the ship sixteen months earlier, and she now presented a number of pieces of silver plate to both officers and men.

H.R.H. The Duke of Kent was promoted to the rank of Rear-Admiral on June 8th. On the outbreak of war he took up duty under one of the Naval Commanders-in-Chief in the United Kingdom. In December he was elected an Elder Brother of Trinity House.

NAVAL TREATIES.

On April 27 the German Government transmitted to the British Government a memorandum * denouncing the Anglo-German Naval Agreements, on the alleged ground that "the British Government have unilaterally withdrawn the basis" upon which those agreements were founded. The 1935 Agreement †—embodying the 35 per cent. ratio—was repudiated altogether, as was the declaration ‡ of July 17, 1937, supplementing and clarifying it. In the main 1937 Agreement § the obligation to exchange information was repudiated, but the German Government was condescending enough to express the intention still to observe the qualitative restrictions. But even that intention was so vaguely defined that it was by no means clear how much it covered. In accordance with Hitler's habit when breaking or repudiating obligations by which he was bound, the note concluded with an offer to negotiate a new treaty.

The British Government was, naturally enough, in no hurry to reply to this note, but as it left the position very vague, clarification was obviously necessary. The reply || was despatched on June 28.

After the outbreak of war, the various Powers concerned were informed that the provisions of the London Naval Treaty of 1936,

* See p. 265.

† See "Brassey," 1936, p. 311.

‡ See "Brassey," 1938, p. 357.

§ See "Brassey," 1938, p. 348.

|| See p. 266.

and of the various bilateral pacts based on it, were suspended for the period of the war, in accordance with the provisions made therein for that contingency.*

BOARD OF ADMIRALTY.

Admiral Sir Roger Backhouse, who had been First Sea Lord only since September, 1938, was obliged to relinquish that office in May, owing to a serious breakdown in health which followed repeated attacks of influenza, contracted in the spring. He was relieved by Admiral Sir Dudley Pound, until then Commander-in-Chief, Mediterranean.

Vice-Admiral Sir Andrew Cunningham, who had been Deputy Chief of the Naval Staff with Sir Roger Backhouse, became Commander-in-Chief, Mediterranean, with the acting rank of Admiral. He was relieved at the Admiralty by Rear-Admiral Tom S. V. Phillips, a former Director of Plans at the Admiralty, until then in command of Destroyer Flotillas in the Home Fleet.

The appointment of Vice-Admiral G. C. C. Royle as Fourth Sea Lord in succession to Rear-Admiral G. S. Arbuthnot, who was appointed to succeed Vice-Admiral Sir Sidney Meyrick as Commander-in-Chief, America Station, was announced in the summer. None of these appointments actually took effect, or they were suspended owing to the outbreak of war. Vice-Admiral Royle, however, after serving for a time in his old appointment as Naval Secretary to the First Lord, in November succeeded Vice-Admiral Sir Alexander Ramsay as Fifth Sea Lord and Chief of Naval Air Services.

COMMANDERS-IN-CHIEF.

In April, Vice-Admiral J. F. Somerville was obliged by ill health to relinquish the command of the East Indies Station, and was relieved by Rear-Admiral Ralph Leatham. Admiral Somerville was later placed on the retired list.

Admiral of the Fleet Lord Cork and Orrery hauled down his flag as Commander-in-Chief, Portsmouth, on June 30, and was succeeded by Admiral Sir William James.

In October, Admiral Sir Studholme Brownrigg was succeeded as Commander-in-Chief, The Nore, by Admiral the Hon. Sir Reginald Plunkett-Erle-Drax, who a year earlier had relinquished the command at Plymouth after holding it for three years.

ADMIRALS OF THE FLEET.

On June 28, Admiral Sir Roger Backhouse was placed on the retired list on account of ill health. The following day he was promoted to Admiral of the Fleet on the retired list—an honour which was last bestowed upon Admiral the Marquess of Milford Haven, better known to the Navy as Prince Louis of Battenberg, just after the last war.

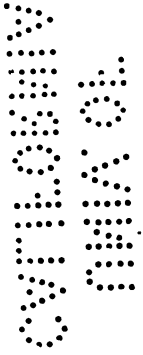
On July 31, Admiral of the Fleet Sir Reginald Tyrwhitt was

* See p. 271.



HOW THE ROYAL VOYAGE WAS DELAYED.

The King taking a photograph of the ice floes through which the Royal squadron had to force its way.
("The Times," photograph.)



placed on the retired list, and Admiral Sir Dudley Pound was promoted in the vacancy so caused.

In February, Admiral of the Fleet Lord Chatfield succeeded Sir Thomas Inskip as Minister for the Co-ordination of Defence, with a seat in the Cabinet. Such an appointment was without precedent in living memory, but it was widely welcomed as a recognition of the peculiar needs, both of the times and of the British Empire. For the proper co-ordination of defence, Service experience is indispensable, and the choice of a sailor, rather than a soldier or an airman, was a recognition of the particular characteristics of British war strength.

OBITUARY.

Admiral of the Fleet Sir Roger Backhouse died in London, of the illness that had caused his retirement from the Admiralty and from the active list shortly before, on July 15.

On September 12 Admiral Sir George King-Hall, the second senior surviving retired flag officer, died at the age of 89.

FLEET EXERCISES.

COMBINED FLEETS.

Fleet Exercises by the Combined Home and Mediterranean Fleets took place, as usual, in the vicinity of Gibraltar during the first two weeks in March. As usual, half of the time was devoted to tactical exercises, of which no details are ever made public. But on this occasion the strategical exercise was also confidential, with the result that no report of it appeared in the Press. The two Fleets stayed at Gibraltar in company for the week following the conclusion of the Exercises, March 12-18, for the usual staff conferences, after which the Home Fleet returned to home ports for Easter leave and the Mediterranean Fleet started its spring cruise to Riviera ports.

DEFENCE EXERCISE AT ALEXANDRIA.

From August 15 to August 17 a comprehensive Combined Exercise was undertaken to test the defences and air raid precautions organisation of Alexandria and the whole Mediterranean coast of Egypt. Aircraft of the Fleet Air Arm made about a dozen attacks each night, besides a number in the daytime. H.M.S. *Arethusa* and a division of destroyers carried out mock bombardments of Alexandria harbour, in order to exercise the coastal batteries. Landing parties were put ashore from H.M. ships during dark hours at Abukir and West Dekhela. "Black-outs" and emergency fire and salvage exercises were carried out in the city of Alexandria and elsewhere.

R.A.F. EXERCISE WITH HOME FLEET.

On May 18 advantage was taken of part of the Home Fleet's sailing eastward from Portland to exercise some of the squadrons of the Coastal Command in reconnaissance, torpedo attack, and bombing.

The weather was not too favourable for air operations, misty, with a low cloud ceiling; but the fleet—consisting of the Nelson, Rodney, and Ark Royal, with an anti-submarine screen of destroyers—whose position was, of course, known within fairly narrow limits—was located and reported by a single Anson plane sent out from Thorney Island. On receipt of the report, three squadrons of Vildebeest torpedo-bombers were despatched from Thorney and delivered their torpedo attack some 30 miles south-west of the Isle of Wight. This was an elementary exercise, the bombers having made a departure from the Isle of Wight so that there was very little exercise in navigation in it. After the torpedo attack, bombing practice was carried out against motor-boat targets on the range in Christchurch Bay, practice smoke bombs being used. The aircraft were back at Thorney before mid-day.

DEFENCE EXERCISES AT SINGAPORE.

The annual Combined Exercises at Singapore took place as usual in the third week of March. Vice-Admiral Sir Percy Noble, Commander-in-Chief, China, was in supreme command, and Vice-Admiral J. F. Somerville, Commander-in-Chief, East Indies, also participated. Details of the Exercises were not made public, but they were understood to have consisted, as usual, of a full-scale test of the defence arrangements, of all three Services, and of their co-ordination, against attack from the sea.

In June a Defence Conference was held at Singapore, in which over fifty British and French Service representatives participated. Admiral Sir Percy Noble presided and Vice-Admiral Sir Ragnar Colvin, First Naval Member of the Australian Naval Board, was also present; the chief French representatives were General Martin, commanding the troops in Indo-China, Rear-Admiral Decoux, Commander-in-Chief in the Far East, and Colonel Devege of the Air Staff. Amongst the British members were the Air Officer Commanding, India, the Deputy Director of Military Operations, India, and the General Officer Commanding, Burma and China. Ceylon and Malaya were also represented.

As a result of the Conference, the Singapore and other Malay Garrisons were increased in August by the addition of one British and five Indian battalions from India, with other troops to a total of some 7,000 and a number of Air Force squadrons. After the arrival of the reinforcements, a further series of Combined Exercises took place, to practise the recently arrived units in their new duties.

INTERNATIONAL NAVAL SAILING RACES.

The 5th International Naval Regatta was held at Kiel from July 7-14. The British team was led by Captain J. R. S. Haines, and consisted of Lieutenant S. Woodcock, helmsman, Lieutenant J. C. Grattan, fore-sheetman, and Lieutenant-Commander T. B. Brunton, reserve. The races, as usual, were sailed in "star boats," provided

by the hosts, the German Navy. There were five races ; the British boat finished first in two of them, second in two, and third in one.

The results of the Regatta were :—

1st England	66 points.	Winner of Hindenburg Challenge Cup.
2nd Germany	58 points.	
3rd Sweden	53 points.	
4th Holland	26 points.	
5th Italy	25 points.	
6th Estonia	21 points.	
7th Denmark	18 points.	
8th Rumania	16 points.	
9th Spain	1 point.	

The Admiralty issued a fleet order announcing these results, expressed their satisfaction at the success of the British team, and congratulated the individuals concerned.

FRENCH NAVAL VISITS TO BRITISH PORTS.

A number of visits were paid to British ports by units of the French Navy during the year. In March the French destroyers which had escorted the President and Madame Lebrun halfway to Dover from Calais—they were relieved by the British 5th Flotilla in mid-Channel—visited Portsmouth during the President's stay in London.

In April, three French battleships and seven destroyers—including four *contre-torpilleurs* of the “Mogador” class—visited Gibraltar. They remained there throughout the stay of the German squadron in Spanish waters.*

In May and June a large part of “l'Escadre de l'Atlantique” visited a number of British ports, the battle cruisers Dunkerque and Strasbourg, the former the flagship of Vice-Admiral Gensoul, commanding “l'Escadre de l'Atlantique,” visited Liverpool, Oban, Scapa Flow, and the Firth of Forth. The cruisers Georges Leygues, Rear-Admiral Godfroy, Gloire, and Montcalm went to the Clyde, and thence to various anchorages in the vicinity of Oban before rejoining the Vice-Admiral for the last two visits.

Cardiff was visited by the flotilla leaders Jaguar, Rear-Admiral Douval, Fougueux, Frondeur and l'Adroit ; Penzance, Falmouth, Torquay, and Dartmouth were visited by other detachments of torpedo craft.

On June 9 the battle cruisers and cruisers were welcomed on their arrival in the Firth of Forth by the Home Fleet under the command of Admiral Sir Charles Forbes ; they stayed for five days, during which there was a very full programme of entertainments for the visitors, both civic and naval, sporting contests, and professional consultations. Both officers and men of the visiting squadron expressed themselves greatly touched by the spontaneous warmth of their reception, not only in the official functions but also in every casual contact.

In July, the new Commander-in-Chief in the Mediterranean,

* *Vide* Chapter II.

Admiral Ollive, visited Malta in his flagship, the battleship *Provence*, escorted by three destroyers.

As already recorded, *Amiral de la Flotte* Darlan was the guest of the Board of Admiralty at Weymouth when the King inspected the Reserve Fleet in August.

FLEET AIR ARM.

The long-expected assumption by the Admiralty of administrative control of the Fleet Air Arm was announced in Parliament on May 23. The following day the Navy took over the aerodromes at Lee-on-the-Solent, Ford (Sussex), Worthy Down (Winchester), Donibristle (Fife), and Bermuda ; shortly afterwards that at Lympne, and the R.A.F. lease of the civil aerodrome at Southampton (Eastleigh) were also taken over. The "parent ships" of these stations, on the books of which officers and ratings serving these are borne, were named *Daedalus*, *Peregrine*, *Kestrel*, *Merlin*, *Malabar*, *Buzzard*, and *Raven*.

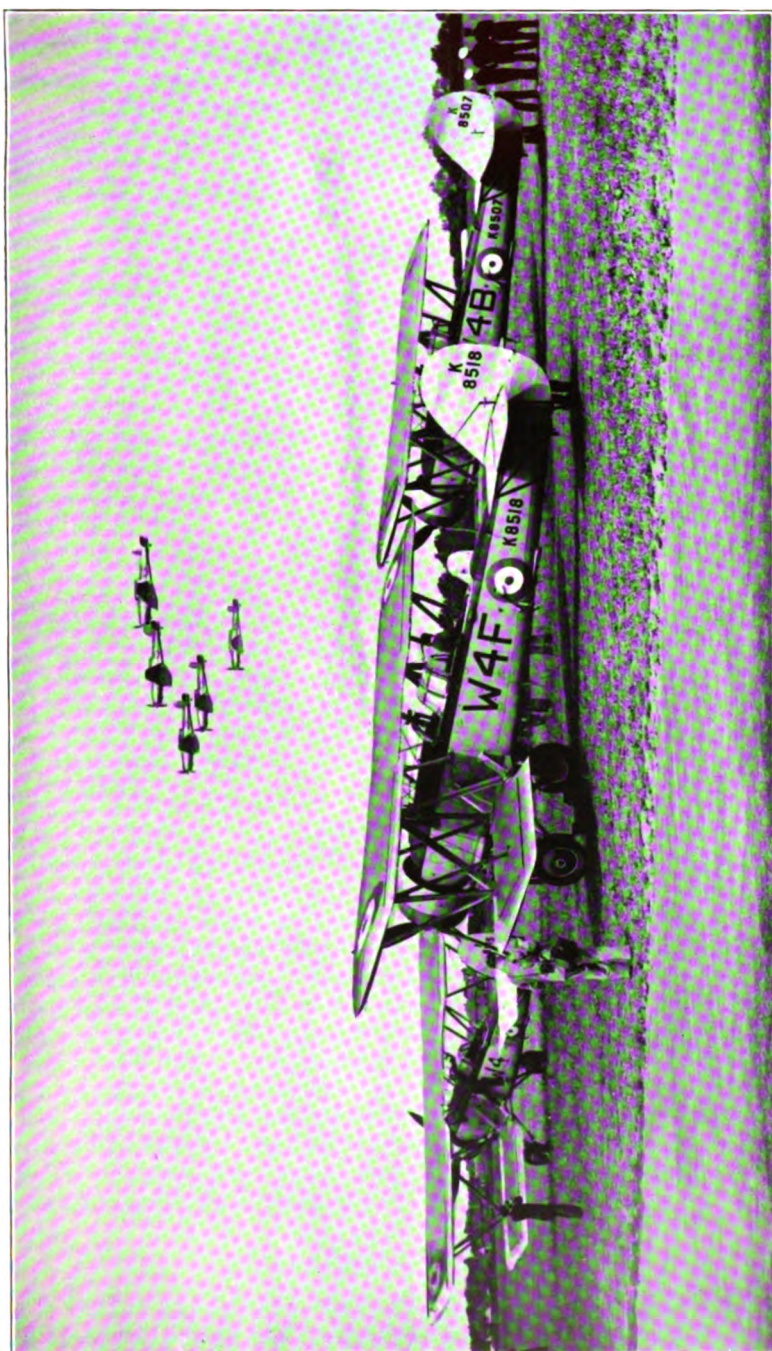
Rear-Admiral R. Bell Davies, V.C., was appointed to command the naval air stations, to be known as R.A.N.A.S. His headquarters are at Lee-on-the-Solent.

The dual control of the Fleet Air Arm ceased from May 24, and the commissions in the R.A.F. held by naval officers serving in the Fleet Air Arm were thereupon cancelled. A number of R.A.F. officers and men continue, however, to be lent to the Fleet Air Arm for the present, until the purely naval personnel is available to replace them. The initial flying training of pilots in the Navy continues to be carried out by the Royal Air Force. But the specialised naval training of pilots, and all the training of observers, is now carried out entirely in naval establishments.

The provision of naval ratings to replace men borrowed from the R.A.F. has proceeded apace. The new rating of "Naval Airman" was created in May, in grades running from "Naval Airman, 2nd class," the equivalent of ordinary seaman, to Chief Petty Officer Airman. Ratings of the new branch are eligible for the non-substantive rates of Air Gunner—who are also telegraphists—Observer's Mate, and Pilot. Ratings of the seaman and telegraphist branches holding those qualifications were transferred to the new branch on its formation, and recruiting for it direct from the shore was at once started. All men of the new branch were allocated to the new Port Division of Lee-on-the-Solent, which also comprises the Air Maintenance ratings of Air Artificer, Air Fitter, Air Rigger, and Air Mechanic.

Warrant rank in the Air Branch was introduced during the year. In May five volunteers were called for from Warrant Shipwrights for transfer to Warrant Air Mechanic, and the names of officers so transferred were published in July. Air Artificers and Naval Airmen are also eligible for advancement to warrant rank.

The insignia of the Fleet Air Arm were altered during the year. Officers of the Air Branch now wear a capital "A" in gold inside



A NAVAL AIR STATION.

"Skua" fighters from the Ark Royal flying above training planes of the Fleet Air Arm at Lee-on-the-Solent.

the "curl" of the stripe on the sleeve, in place of the badge formerly worn above the stripes. The pilot's "wings" consisting of wings of gold embroidery, having in the centre a silver anchor and cable surrounded by a gold wreath and surmounted by a crown, is worn on the sleeve immediately above the stripes—by Marine Officers, on the left breast. It is worn as long as an officer is employed, or eligible to be employed, as pilot of a Service aircraft.

FLEET AIR ARM MATERIAL.

The Fleet Air Arm supply and repair ship of the 1938 programme is to be named Unicorn. The order for her was placed with Messrs. Harland & Wolff, Belfast, in April.

H.M.S. Furious was commissioned in June for service as training carrier, for deck landing, in the Home Fleet, replacing the Courageous, which was taken in hand for refit.

Fleet Air Arm planes are described in detail in Chapter VIII.

PERSONNEL.

OFFICERS.

The expansion of personnel, to keep pace with the material expansion which would materialise with the completion of ships under construction, continued throughout the year. One result of this was an increase in the number of officers' promotions. Twenty commanders were promoted to captain in the midsummer list, as compared with fifteen of recent batches, or ten in the years from 1921 to 1933.

CADETSHIPS.

Direct entry cadetships were continued at the high figures of recent years, as were the entries to Dartmouth. A change was made in the summer in the entrance examination for the latter, the Admiralty announcing that they had decided to adopt the "Common Entrance Examination" for public schools. There are several advantages in this. It is now unnecessary for preparatory schools, from which Dartmouth boys are drawn, to provide a special "Navy Class"; boys who, after passing the qualifying examination, are, for medical or other reasons, not awarded cadetships, can enter a public school without further examination, and it is a further step in assimilating the Dartmouth education to that of ordinary public schools, of which the earlier steps were the improvement of the curriculum and the adoption of the "house system".

RETIRED OFFICERS.

A further number of retired officers were recalled for home and shore service during the year, thus freeing officers on the active list for sea service. Regulations were introduced during the year to clarify their status in the matter of rank and command. Broadly they may be summarised by saying that a retired officer, whatever

his rank on the retired list, is eligible for employment only in the rank in which he was last employed on the active list, unless he is definitely promoted or appointed in a higher rank ; and he wears the uniform of the rank in which he is appointed.

PROMOTION FROM THE LOWER DECK.

In fulfilment of the decision announced in March, 1938, to increase the number of commissions as lieutenant granted to senior warrant officers " for long and zealous service," in March twenty-six warrant officers were promoted to the rank of lieutenant, with seniority dated back to December 1, 1938. Shortly afterwards nine engine room warrant officers were similarly promoted to lieutenant (E). The scheme for selective promotion, originally intended to come into force in 1942, was accelerated and inaugurated in October, 1939.

In August, the scheme for the promotion of younger warrant officers to commissioned rank was put into force, the names of twenty officers—eight gunners, seven torpedo gunners, three boat-swains, and two warrant telegraphists—were announced as having been selected for the special course devised for them. The Lords of the Admiralty expressed their satisfaction that they had found it possible to promote so many warrant officers to lieutenant on the general list, and announced that, subject to satisfactory completion of the qualifying courses, their commissions as acting lieutenant would be dated October 1, 1939. Further selection would be made half-yearly and the age limits would be 25 to 36 on the day of selection. The scheme was also extended to the E branch, and six officers were promoted with seniority July 1.

In July, the results of the courses for direct promotion to sub-lieutenant from the lower deck were announced. Twenty-four of those who had been under instruction were promoted to acting sub-lieutenant with seniority of September 1, 1939. A further eleven were rated acting petty officer and placed on the roster for promotion to warrant rank. Six returned to general service at the end of the course, not having reached the necessary standard for special treatment, and one was sent back to general service without completing the special training. A further batch of candidates began their special training later in the year.

Three artificer apprentices—two E.R.A. apprentices and one Air Artificer apprentice—were selected as naval cadets (E) in August, and joined the R.N. College, Dartmouth, the following month.

Engineer Captain S. O. Frew, promoted to that rank on June 30, was the first engineer officer who started his career on the lower deck to reach four stripes. He entered the Navy as a Boy Artificer in 1905, became a Mate (E) in 1916, and Engineer Commander in 1929.

RATINGS.

The expansion of the Navy continued to provide rapid advancement in all branches. Recruiting continued satisfactorily in all branches, the only shortage being in qualified artificers entered direct

—a class of man for whom all the Services besides general industry have been competing. The rating of "Wireman" was reintroduced in the summer, consisting of semi-skilled men employed solely on the maintenance of electrical circuits and machinery.

The specialisation of gunnery ratings introduced in 1938 was further recognised by the addition of the letters Q, L, C, or A, to the badges worn by seaman gunners and higher gunnery ratings. The increased responsibilities of the signal branch were recognised in an order directing that the senior signal and wireless rating tribal destroyers should be of chief petty officer rate—as in larger ships—and in smaller ships a petty officer. Where only one is borne, however, he is to be of leading rate.

SUBMARINE DISASTERS.

The summer of 1939 was unlucky for submarines of more than one Navy. On May 23 the U.S. submarine *Squalus* sank in 40 fathoms water off the New Hampshire coast through a faulty valve causing flooding of one or more compartments. Twenty-four of her crew were rescued by means of the diving bell developed by the U.S. Navy for that purpose, but twenty-six lost their lives. The boat was eventually raised, after one unsuccessful attempt.

On June 1 H.M. submarine *Thetis*, which was carrying out trials in Liverpool Bay, sank in 22 fathoms water. Four of her occupants escaped the following morning by means of the Davis submarine escape apparatus, with which every British submarine is supplied, but ninety-eight lost their lives.

On June 15 the French submarine *Phénix*, diving for exercise in Camranh Bay, Indo-China, failed to surface. She was later located lying on the bottom in 55 fathoms water. None of her company of fifty-five was saved.

THE THETIS.

The loss of the *Thetis* created considerable uneasiness in the minds of the lay public, partly because of the large number of lives lost, and partly because of the suspense experienced by the public after she had been located, when the possibility of saving the lives of those known to be still alive inside remained uncertain for nearly two days. The circumstances of the loss were as follows:

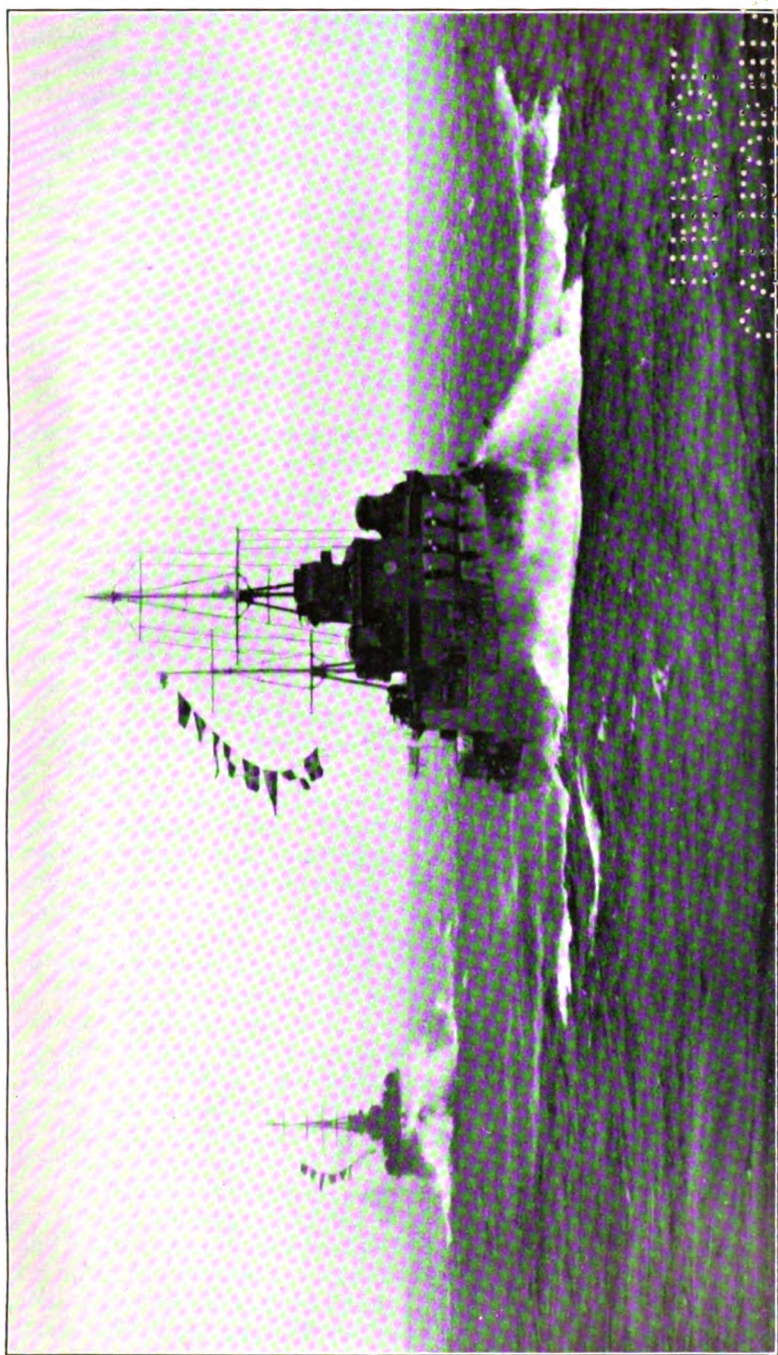
Three submarines of a new class, the *Thetis*, *Taku*, and *Trident*, were being built at Messrs. Cammell Laird's yards at Birkenhead, of which the *Thetis* was the first to be finished. She had done part of her acceptance trials, when on a cruise to Gare Loch, but the diving trial could not be done on that occasion, owing to some minor defect which was easily remedied on her return. It was therefore arranged for her to do her diving trial, which included a dive of three hours duration, in Liverpool Bay, only an hour or two from the Mersey where the builders' yard is situated, though keeping, of course, out of the track of shipping using the port.

A man-of-war building by contract is not actually handed over to the possession of the Navy until after she has successfully completed

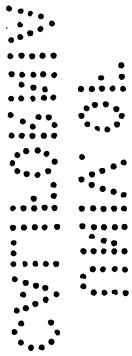
her acceptance trials. But since the handling of a submarine at sea, and particularly diving, is a highly skilled job which can only be done by a trained submarine crew, a submarine on her trials is in charge of the officers who will take her over when completed, while the builders' men actually work all the machinery, as ordered by the naval officers, the naval crew assisting them as necessary. The *Thetis* was therefore under the command of her captain, Lieutenant Commander Bolus, when she left the Mersey for her trials. There were also onboard, besides her naval officers and crew, some thirty officials and workmen from Messrs. Cammell Laird, eight Admiralty officials from the Constructor's Department, several staff officers from the 5th Submarine Flotilla, and the river pilot who had brought her out. Onboard also as spectators were Captain Oram, in command of the 5th Submarine Flotilla which the *Thetis* was to join after completion, the captain of the *Taku*, and the captain, first lieutenant, and engineer officer of the *Trident*, who seem to have taken the opportunity to watch the trials of the first boat to complete, in preparation for their own. There were thus 102 persons in all onboard. A tug provided by the builders was in attendance, onboard which was a lieutenant and signalman from one of the other submarines.

After carrying out turning trials, the *Thetis* duly dived, informing the tug of the course to be steered, and that the dive would last three hours. She did not reappear, however, at the proper time, and the officer in the tug sent a message to the 5th Flotilla headquarters at Fort Blockhouse, Gosport, which expressed his anxiety. By the time it arrived, as the *Thetis*'s surfacing signal was then substantially overdue, the procedure for sending assistance to a submarine to which an accident had occurred had already been put in motion. The destroyer *Brazen*, which was the ship capable of giving assistance closest to the spot, was already on her way and arrived at eight o'clock. In the meantime, the Royal Air Force had been asked to assist, and planes from the nearest station had already reported sighting a mark buoy in a position some ten miles from where the *Thetis* had dived.

Unfortunately the position reported was erroneous, and though the *Brazen* searched the vicinity of it all night, nothing was found, and she did not succeed in getting into signal communication with the *Thetis*. In the morning, however, the stern of the *Thetis* was sighted, protruding above water, close to the position in which she had dived. She was lying in 22 fathoms water with her nose on the bottom, evidently flooded forward. The *Brazen* and the tug immediately closed her, and the *Brazen* gave the signal indicating that assistance was at hand. Shortly afterwards Captain Oram and Lieutenant Woods, the torpedo officer of the *Thetis*, appeared on the surface, having left the boat with the aid of the Davis submarine escape apparatus, followed by Leading Stoker Arnold and Mr. Shaw, one of Cammell Laird's workmen. They reported that the *Thetis*'s two forward compartments were flooded, but that all onboard were well, and were coming out in due course, by means of their Davis gear, of which every man onboard had a set. No more, however, appeared, and it was evident that



THE ROYAL ESCORT IN MID-ATLANTIC.
H.M.S. Southampton and Glasgow steaming against the gale.
(*"The Times"* photograph.)



if the people onboard were to be rescued, it must be done from outside.

By that time the salvage tug *Vigilant*, belonging to the Mersey Docks and Harbour Board, had arrived on the scene, and strenuous efforts were made to hold the stern of the submarine above water, and even to lift it higher, so that it might be possible to get access to the men inside. Unfortunately it was not far enough out of water for a hole to be cut into the interior of the boat, and the strong tides and the weight of the partially flooded submarine made it impossible to lift it higher. Towards afternoon, the stern of the *Thetis* slipped from the wires that were holding it and disappeared under the surface. It was hoped that it would reappear at slack tide, but it did not, and she was found to be lying horizontally on the bottom, evidently more extensively flooded than at first. The strong tide streams made diving exceedingly difficult, and despite the utmost efforts, it proved impossible to do anything more. After forty-eight hours, the Admiralty announced that it was no longer possible to hold out any hope that anyone onboard could be alive.

Salvage of the sunken submarine proved very difficult, owing to the exposed position in which she was lying and the weight of the flooded hull. It was not until November that it was achieved. The full circumstances and cause of the loss were, however, fully ascertained long before that date. The public interest in the case was so great that the Government set up a special tribunal, presided over by Mr. Justice Bucknill, one of the most experienced judges of the Admiralty Court, to make a full enquiry.

The result of this showed that the boat was flooded through the rear door of one of the torpedo tubes being opened while the bow cap was open to the sea. This flooded the torpedo-tube compartment, and the men in it, in escaping to the next, were unable fully to close the watertight door between them. That compartment became flooded too, and thus admitted more water to the boat than could be counteracted by emptying the ballast tanks. The sudden influx of water forward took the bow of the boat down, and it hit the bottom of the sea, thus putting the submarine signalling apparatus out of action. Those in the boat did not then make use of their Davis apparatus to escape for two reasons. It was thought that it would be possible to bring the boat to the surface ; and they did not know, in the absence of the signal established for the purpose, whether, if they did emerge, they would find anyone on the spot to pick them up. They set to work to save their ship.

All onboard worked all night to that end ; but they could not succeed in getting rid of the water in the forward compartments, and all they could eventually do was to get the stern of the boat up, though they were not sure if it were actually out of water. Then, although they still did not know if there were any ship there, Captain Oram and Lieutenant Woods, as the two officers best qualified to assist the salvage if they were picked up, left the boat with their Davis gear. Captain Oram had strapped to his arm directions how to assist the sunken boat, which should be available to those

who came to their assistance even if he should not himself survive.

As it happened, the *Brazen* arrived as he left the boat and he and Mr. Woods were picked up at once. So were Arnold and Shaw, who left some time after them. But from the enquiry, it appeared probable that the reason for no more of the occupants succeeding in leaving the ship was that, by the time they tried to, the exhaustion of the air had left them in a physical condition such that they could not make proper use of the Davis gear.

The full story is too long to recount here, and indeed Mr. Justice Bucknill's report has not yet been made public.* But the evidence given at the enquiry went to show that neither the internal mechanical arrangements of British submarines, nor the safety precautions prescribed in the drill of their crews, nor the fleet organisation for dealing with accidents to submarines were open to serious criticism. The loss of the *Thetis*, with its lamentably heavy toll of life, seems to have been brought about by the cumulative effect of a series of small defects or mishaps, no one of which alone could have been in any way serious. One thing stood out unmistakably; the behaviour of every man onboard the *Thetis* was magnificent. There was no sign of panic or loss of self control by anyone, and the conduct of all in what is, perhaps, one of the most harrowing situations that can be imagined, was such as to be an inspiration to their countrymen.

ORGANISATION FOR TRADE DEFENCE.

MERCHANT NAVY DEFENCE COURSES.

Various measures, designed to perfect the organisation for the defence of the Merchant Navy in the event of war, were taken during the year. The Defence Courses for Merchant Navy officers which were begun in 1937 have been described in former issues of this Annual. In January it was decided to extend them to include men. Seamen and stewards in the Merchant Navy were given instruction and drill in the weapons that would be mounted in defensive armaments in merchant ships, chiefly the smaller guns. Their courses were carried out under the superintendence of naval officers who were stationed at the various chief commercial ports to organise the defence instruction of the Merchant Navy. They were open, not only to men actually pursuing the calling of merchant seamen, but also to those who had former seagoing experience, provided they were not in a "reserved occupation," and were willing to serve afloat in war.

In March two submarines, L26 and L27, visited the Port of London for a few days and were berthed in Shadwell Basin. They were open to the visits of Merchant Navy officers, who were invited to go aboard for the purpose of amplifying the instruction they had received in their Defence Courses. The instruction thus imparted was most valuable in adding realism to a part of the Defence Course which up to then had been wholly theoretical.

* This report has since been published.

EXPANSION OF ADMIRALTY NAVAL STAFF.

In July it was announced that two additional Divisions had been constituted in the Naval Staff at the Admiralty, a Local Defence Division and a Trade Division. In reality, it was a resurrection rather than a creation. In the last war, as is well known, an Anti-Submarine Division was formed to deal with the most pressing operational problem of the day. After the war, in the course of peace-time contraction, it was merged with the Minesweeping Division and other organisations under the name of the Local Defence Division. At a later date, in the course of further contraction to meet the demands of financial stringency, the duties of the Local Defence Division were undertaken by sections of other Divisions, and it ceased to have a separate existence; but the necessity for its resurrection in the event of expansion was recognised throughout.

The history of the Trade Division is similar, if less involved; this was its second resurrection. Its first, after a suppression of some years, was at the beginning of the last war, when it was constituted as the connecting link between the Navy on the one hand, and on the other with the Mercantile Marine, and also with the economic departments of the Government. It continued until the end of 1928, when it was reduced to the status of a section of the Plans Division, but its duties remained unaltered.

W.R.N.S.

In April it was announced that the Women's Royal Naval Service was once more to come into existence, the members of which would replace naval ratings in various duties on shore. Mrs. Laughton Mathews, who had served as an officer of the W.R.N.S. in the last war and had since been prominently identified with the Sea Ranger branch of the Girl Guides, was appointed Director of the new service, with, it was understood, the relative rank of Rear-Admiral.

The conditions of service were announced in April. Age limits were 18 to 50, and recruits were invited in two categories—immobile, consisting of those who would serve in a naval establishment while living in their own homes, and mobile, consisting of those who would serve wherever required. The duties upon which they would be employed were clerical—of various grades, including coding—motor transport, cooking, catering, storekeeping, and the like. There were to be three grades of officers—chief officer, first officer, and second officer—and three rates—chief wren, leading wren, and wren—with pay ranging from £275 a year for chief officers down to 80s. a week for unskilled wrens, with various allowances and other benefits. By September, over 1,100 had been enrolled, and immediately after the outbreak of war there were, of course, calls for their services from all the numerous war-time naval bases that are needed at many ports not utilised for naval purposes in time of peace.

MATERIAL.

The actual number of ships added to the fleet up to the outbreak of war was not large. The reconstruction of the battleship *Valiant* and the battle cruiser *Renown* was completed—thus producing the practical equivalent of two new capital ships—and that of the *Queen Elizabeth* was well advanced. The new cruisers *Belfast* and *Edinburgh* of the “improved Southampton” class, were completed and commissioned. The remaining four “*Tribal*” class destroyers *Bedouin*, *Mashona*, *Punjabi*, and *Tartar*, completing two flotillas of this class of ship, were put into commission, as were the eight destroyers of the “*F*” class and the *Kelly*, the first of the succeeding “*K*” class. Four submarines, the *Triumph*, *Trident*, *Thistle*, and *Truant*, of 1,090 tons—sister ships of the ill-fated *Thetis*—were also added to the fleet.

The tale of ships actually completed in the period under review, however, is no measure of the progress made towards restoring the Navy to proper strength. In the year preceding the outbreak of war, no less than nine cruisers—five of the “*Dido*” class and four of the larger “*Fiji*” class—were put afloat from the builders’ yards. The 1939 programme above provided for the construction of seventy-three ships, as compared with the twenty-nine of 1938. In addition to these, the Parliamentary Secretary to the Admiralty announced in Parliament on August 2 that a further one hundred and seven trawlers were being provided for mine-sweeping and anti-submarine duties. Of these, eighty-seven were being purchased and fitted out for their new duties, the others were being specially built. Fifty-six vessels of a “whale-catcher” type were also to be built, some for patrol and some for anti-submarine duties. Besides these, ten fleet mine-sweepers, six home defence vessels, and one cable ship were to be built—one hundred and eighty vessels in all. A floating dock for small craft had also been purchased, and it was intended to make still further provision, of which the details had not been settled. The presentation of a Supplementary Estimate of some £11,000,000 was foreshadowed, but it was not issued before the House rose.

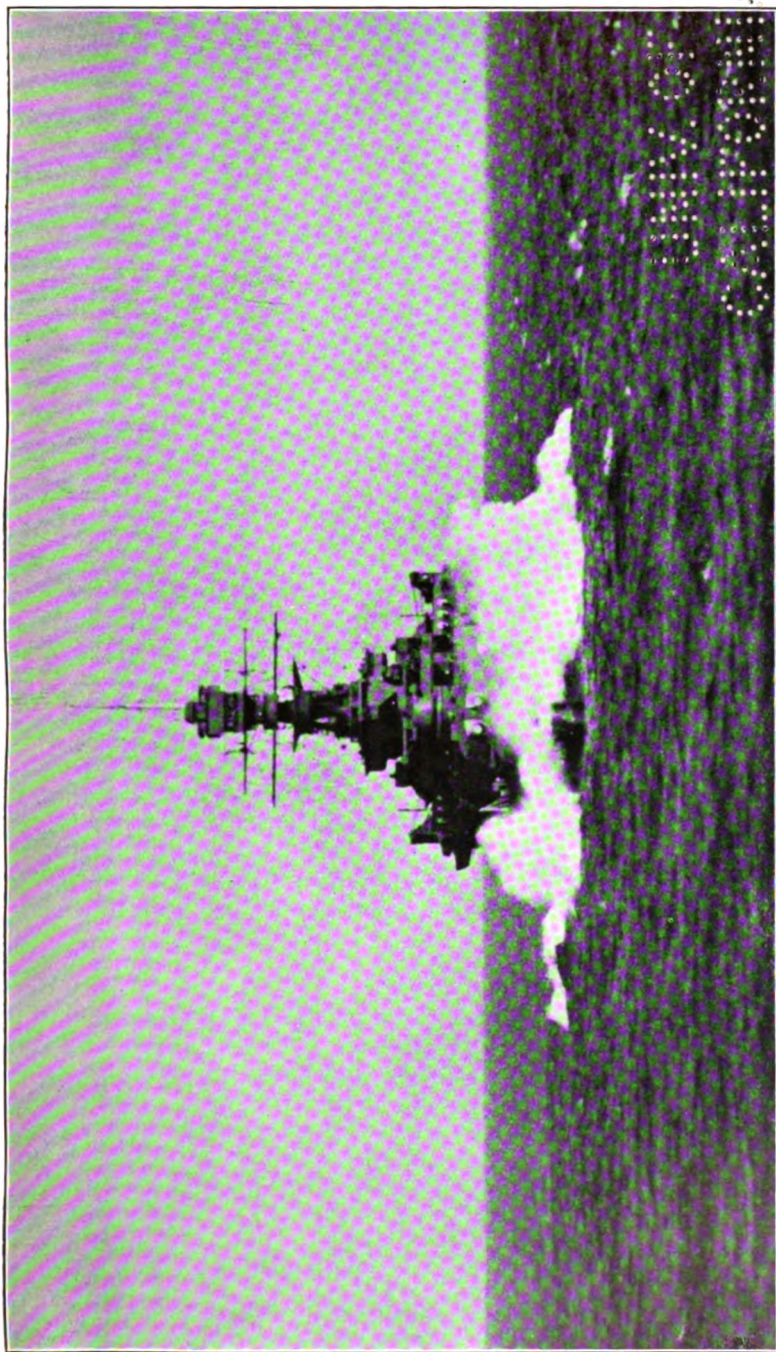
On the outbreak of war, six destroyers building in British yards for Brazil were taken over for the British Service, in accordance with the usual provision in the building contract in the case of such vessels.

NAVAL RESERVES.

A substantial and progressive expansion in the Naval Reserves, of various branches, took place throughout the period under review.

VOLUNTEER UNITS.

At Portsmouth, where despite its status as the principal naval port, there had hitherto been no facilities for residents to undertake voluntary naval work—the nearest depot of the R.N.V.R. was at Hove—a Volunteer Naval Auxiliary Company was formed early in the year. Its duty in war was to be able to operate the mine-



THE ROYAL ESCORT IN MID-ATLANTIC.

H.M.S. Repulse just before parting company to return home.

*Rough weather made communication by boat impossible and Their Majesties' mail was transferred in a barrel.
('The Times' photograph.)*

sweeping and boat services of the port, thus replacing active service personnel. The age limits for its members were 18 to 60, they were required to attend evening lectures as well as undergoing practical instruction afloat as convenient, and to undertake on mobilisation to join the Navy "for hostilities only." The ranks of the new unit were rapidly filled.

R.N.V.R. EXPANSION.

Three new divisions of the Royal Naval Volunteer Reserve were created in the year, with headquarters at Southampton, Hull, and Cardiff. The first of these, at Hull, came into being on April 3 under the command of Commander A. H. B. Day, R.N., and the cruiser *Calcutta*, hitherto in reserve at The Nore, was appropriated as drill ship.

The second, known as the Solent Division, came into being at Southampton on August 1, under the command of Captain the hon. W. S. Carson, R.N. (retired), with Lieutenant Commander J. S. Head as Officer Instructor.

The work of the R.N.V.R. Divisions was largely concentrated upon anti-aircraft gunnery, with the object of providing trained A.A. guns' crews for ships in reserve. Certain of the older destroyers which, like the *Whitley*, had been refitted as escort vessels, were employed for this purpose. The *Wallace* joined the Mersey Division in June, and it was announced that the *Vivien*, *Vega*, *Woolstan*, and *Winchester* would also be allocated for that duty.

London had a demonstration of the expansion of the R.N.V.R. in May, when H.M.S. *Chrysanthemum* was moored off Victoria Embankment just above H.M.S. *President*, to supplement the headquarters accommodation of the London Division.

In July, the establishment of R.N.V.R. units at Portsmouth, Devonport, and Chatham were announced. These were confined to the Writer and Supply branches and were formed of men living near enough to attend evening classes without difficulty.

R.N.V. SUPPLEMENTARY RESERVE.

A new branch of this reserve was created during the year, with the object of providing engineer officers—mechanical, electrical, and aeronautical—in war. The members of this Reserve do no naval training or duty in time of peace. They undertake, however, to join up at once for naval service on the outbreak of war. It was created in the first place for the benefit of yachtsmen, to ensure that they should have a chance of employment in the Navy in the event of war.

ROYAL NAVAL SPECIAL RESERVE.

This branch of the Naval Reserve came into being on the adoption of the compulsory military service. Men called up under the Act prescribing it when they register may, if they wish, express a preference for naval rather than military service. Of those who do so, all who

have had sea-faring experience, ex-Sea Cadets, members of Admiralty Staffs and dockyard employees, about 5,000 annually, are as a matter of course allocated to the R.N.S.R. instead of to the Militia. Of the remainder, the Navy takes as many as it can absorb, estimated at some 7,000 annually, and 1,200 Marines; but that number in practice proved to be only about one third of those who volunteered. The Navy was thus able to set a high standard for those accepted.

Men who were already enrolled in the R.N.R. or R.N.V.R. on April 27, 1939, were exempt from compulsory service under the Act. But after that date, it was no longer possible for young men to enter those branches of the Reserves as officers until after they had completed their six months preliminary compulsory training in the R.N.S.R. as ratings.

Training camps for the R.N.S.R. were established at Trevel, near Plymouth, and Fareham, near Portsmouth, and one at Exmouth for the Marines. The first was designed to accommodate 2,600, the second some 1,900, and the Marines camp, 800. The first batch of R.N.S.R., 500 strong, joined up for training at Plymouth on August 16. A fourth training centre was established at Port Edgar, on the Firth of Forth, for recruits from the fishing fleets, who were to be trained principally for minesweeping.

An invitation to ex-naval ratings and ex-Marines with sea experience and not over the age of 53 to rejoin the Navy to assist in the training of the Special Reserve was issued in August. They would be accepted on the same terms as the existing "Supplementary Parties," i.e., to draw the pay of the rate in which they serve, as well as the pension already earned.

POWERS OF CALLING UP.

In May, the Reserve and Auxiliary Forces Act was passed, which gave the Admiralty power to call up the Immediate Reserve—established in January—and certain other classes of reserves, without the somewhat cumbrous procedure of a Royal Proclamation. This enabled them to call up for training those of the reserves who would be required for certain essential duties—minesweeping and anti-submarine operations—immediately on the outbreak of war, who might well be rusty if they were not given periodical training. Under the powers conferred by that Act, the Admiralty on June 15 called up some 1,900 men of the Immediate Reserve, seven hundred and fifty pensioners, and one hundred and fifty of the R.N.V. Wireless Reserve for three months special training. A similar number were to have been called up in September, but before that date, general mobilisation had supervened. In order to give sea-going training to these men the 17th Destroyer Flotilla of the Reserve Fleet was commissioned in June, consisting of the Keppel—flotilla leader—and the destroyers Vidette, Velox, Versatile, Whirlwind, Vortigern, Viking, Viscount, and Watchman.

The response to this call to the fleet was magnificent in all branches, and the Admiralty expressed their great appreciation of the readiness and good spirit displayed.

On July 13, the Prime Minister announced in Parliament that a further 12,000 men would be called up under the Act for July 31. This would provide for commissioning the whole of the Reserve Fleet so that it could take part in the fleet exercises arranged for the Home Fleet in August. As already described, this fleet was reviewed by His Majesty the King on August 9.

In order to legalise these additional numbers, a Supplementary Estimate increasing the figure under Vote A from 133,000—a maximum figure—to 145,000, was introduced in Parliament on July 24. A further Supplementary Estimate providing for the cost was foreshadowed for later in the year. Actually none was presented, for the cost of these measures was later merged in the cost of the war which began on September 4.

It would, of course, be idle to ignore that all these measures, resulting in a crescendo of preparedness, were the result of the political situation. The growing menace of German aggression was manifest. The fact that the German Army was to be fully mobilised in August was not concealed. The technique of aggression, with its prelude of propaganda and manufactured grievances against the intended victim, was in full swing throughout the year, and it was quite clear that, unless either the German aggressive intentions were abandoned or this country was prepared to sit down under them, the clash would come as soon as the European harvest was garnered. The British Fleet had to be ready for all eventualities by August; and, thanks to the measures described, so it was.

On August 31, complete mobilisation of all the forces of the Crown: Navy, Army, and Air Force, was ordered by Royal Proclamation.

DOMINION NAVIES.

ROYAL AUSTRALIAN NAVY.

The events of March, when Hitler threw off the pretence of a pacific policy which he had assumed at Munich in September, convinced Australia that the empire must be prepared for another struggle, that Australia's security was bound up with that of Great Britain, and that sacrifices were necessary to bring defences up to the necessary standard. At a meeting of Premiers of the States on March 31 Mr. Lyons, the Prime Minister of the Commonwealth, had no difficulty in procuring full co-operation of the States in his defence programme.

One of the measures decided on was the provision of a dock at Sydney capable of taking a capital ship. The full programme envisaged defence expenditure for 1939 totalling £13,000,000, an increase of £5,000,000. In August, Sir Earle Page, leader of the country party, advocated the provision of two battleships for the Royal Australian Navy, suggesting that they might be procured from the United States if the shipyards of Great Britain were too occupied to provide them. This suggestion did not commend itself

to the Government on account of the expense involved, and the long time that must elapse before it could fructify.

On July 10 H.M.S. *Amphion* was renamed and became H.M.A.S. *Perth*, under the command of Captain H. B. Farncombe, R.A.N., M.V.O., the first officer to reach the rank of captain after a naval career passed wholly in the R.A.N. She left England on July 25 for the Commonwealth, and paid a visit to New York—where the World Fair was in progress—on her way, leaving there for Sydney on August 16.

The new anti-submarine school at Sydney was opened in February and H.M. submarine *Phoenix*, of the China Flotilla, paid a two months visit to Australian waters, to co-operate in its work.

In March, the cruiser *Adelaide* was commissioned after being modernised and converted to oil burning. She had been in reserve for eleven years. The *Leander*, flagship of the New Zealand Division of the R.N., Commodore J. W. Rivett-Carnac, joined up with the Squadron for a month's cruise in April and May. In August the *Canberra* and *Sydney* made a cruise to the Dutch East Indies and Singapore.

In August, a Naval Shore Wireless Service was instituted, for the purpose of manning the stations at Canberra, Darwin, and Fremantle.

NEW ZEALAND.

H.M.S. *Achilles* came home to England to recommission in January, after nearly three years on the station. Her new captain was Captain W. E. Parry. She left for New Zealand on January 21 and reached Auckland on May 8.

The *Leander*, Commodore J. W. Rivett-Carnac, joined up with the Australian Squadron for a month in April and May.

In May, it was announced that three modern trawlers for mine-sweeping and anti-submarine duties and training, were to be purchased in England. The two-year defence programme would amount to £9,300,000.

In June some discontent was manifested by New Zealand naval ratings with their rates of pay and allowances. Increases were accordingly approved by the New Zealand Government, and a special committee was appointed to report upon the whole system of naval pay in the New Zealand Division.

ROYAL CANADIAN NAVY.

The effect in Canada of the events in Europe, of March, were exactly the same as in Australia. All parties were united in the conviction that resistance to German aggression would sooner or later become necessary in collaboration with Great Britain, and that the national defences must be overhauled accordingly.

From January to April all six destroyers of the Canadian Navy, *Skeena*, *Saguenay*, *Ottawa*, *Fraser*, *Restigouche*, and *St. Laurent*, working as a flotilla, joined up with the *America* and *West Indies*



THE KING AT GREENWICH.

His Majesty dining with the officers of the Royal Naval College, Greenwich, on July 11, 1939, in the restored Painted Hall.
("The Times" photograph.)

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Squadron of the Royal Navy for some weeks, at Bermuda and on a cruise in the West Indies. A number of the British islands were visited. At the conclusion, the Skeena and Saguenay returned to Halifax, N.S., and the remainder passed through the Panama Canal on their way to Esquimault.

ROYAL INDIAN NAVY.

The escort vessels *Indies* and *Clive* visited Trincomalee, the headquarters of the East Indies Squadron of the Royal Navy, in March; their ordinary independent cruises were then resumed, and in July, another visit was paid to Trincomalee by the *Indies*, *Clive*, *Hindustan*, and *Lawrence*.

In June the passage of the Indian Naval Reserve Forces Discipline Act created four classes of naval reserves, the analogues of those of the British Navy—Fleet Reserve, Naval Reserve, Naval Volunteer Reserve, and Communications Reserve. Recruiting for all four classes began at once.

UNION OF SOUTH AFRICA.

In March Mr. Pirow, Minister of Defence, in his annual statement on the defence of the Union, described the measures of coast defence to be adopted. Cape Town, Port Elizabeth, East London, and Walvis Bay would be defended eventually with 15-in. and 9.2-in. guns. The defence of Cape Town, pending the installation of the coast defences, would be assisted by the monitor *Erebus*, to be lent by the Royal Navy. The Union's chief defence efforts would be concentrated on the Air Force. The *Erebus* was reconditioned in England by Messrs. Thornycroft at Southampton—and was about to be transferred to Cape Town at the end of August. In September, however, it was announced that by agreement between the Governments in the United Kingdom and the Union, the arrangement was cancelled, and other suitable arrangements had been made for the defence of Cape Town.

HONG KONG.

In February, the "Hong Kong Naval Defence Order, 1939" was published in the *London Gazette*. This authorises the Admiralty to accept any offer made by the Government of Hong Kong of the services of the Hong Kong Naval Volunteer Force for general service in the Royal Navy. This force was raised in the Colony in 1933, and has been lent H.M.S. *Cornflower*, sloop, as a drill ship. The commanding officer is Commander James Petrie, D.S.C., R.N.V.R.

H. G. T.

CHAPTER II.

FOREIGN NAVIES.

WHILE one of the results of the war has been to delay the inception of new naval programmes in certain of the smaller countries, in other directions it has had a stimulating effect. Suspension of the obligations of the London Naval Treaty of 1936 and of the Anglo-Soviet Naval Agreement is bound to lead to increases in displacements and gun calibres. An example of this is the decision reported to have been reached by the United States Navy Department to re-design on larger lines the cruisers Cleveland and Columbia, which, in conformity with Treaty limitations, were originally to have been 8,000-ton ships with 6-inch guns.

In the days of sailing ships it was demonstrated beyond doubt that the *guerre de course*, though it might inflict severe financial loss on shipowners and underwriters, could not succeed against a Power possessing command of the sea. Apparently in Germany the belief was held that the development of modern naval construction, more particularly as regards submarines and such specialised designs as the so-called "pocket battleship," had altered all this.* If so, there must by now have been a rude awakening.

In spite of the fact that U-boats were already on station in the Atlantic at the outbreak of war on September 3, 1939, as proved by the sinking of the *Athenia* and subsequent incidents, the submarine menace has been mastered in far less time than in the last war. A system of convoys was instituted with the minimum of delay, and enemy submarines were located and destroyed with gratifying frequency.

Equal disappointment awaited believers in the efficacy of surface attacks on shipping. Between the beginning of October and the end of November, 1939, the "pocket battleship" *Deutschland*, after sinking two merchantmen, the British *Stonegate* and the Norwegian *Lorentz W. Hansen*, captured the American s.s. *City of Flint*, and was later brought to action by the armed merchant cruiser *Rawalpindi*. Though the latter was destroyed, this was the only success of any note which the *Deutschland* could claim.

The Admiral Graf *Spee*, sister ship to the *Deutschland*, made her first appearance in the South Atlantic on September 30, 1939. Between that date and her defeat by three British cruisers in the action off the River Plate on December 13, she succeeded in effecting the destruction of nine British merchant ships, a record which

* See Chapter V.

compares poorly with the twenty-three captures of the Emden or the seventeen of the Karlsruhe in 1914.

The potentialities of the mine for inflicting indiscriminate injury, first realised during the Russo-Japanese War, were confirmed during 1914-18, when an immense amount of tonnage, both naval and mercantile, was sent to the bottom by this means. In spite of the employment of a new type of mine, operated by a magnetic device, losses from this cause in the present conflict cannot have come up to enemy expectations.

Air attacks on warships, except where stationary, have been a complete failure. Merchant shipping has also been assailed from the air, but losses from this cause have not been numerous. On the other hand, aircraft have suffered little from the fire of anti-aircraft guns, though these may be given the credit of having kept the attackers at a respectable height. But in anti-submarine work aircraft have confirmed the opinion formed of their value in 1918.

Neutral naval Powers have undoubtedly been observing with the utmost interest the incidents of the war at sea, and are taking to heart the lessons to be learned from them. These cannot fail in due course to have an influence on the trend of naval construction.

UNITED STATES.

The Naval Appropriation Bill passed on May 18 last involved a total expenditure of \$773,420,241, equivalent to about £154,000,000, and provided for the construction of twenty-three new warships, and the continuance of work on nearly one hundred already under construction. In the course of the debate, which turned chiefly upon the advisability of the two new battleships provided for being of a displacement of 45,000 tons, doubt was expressed whether Japan was in fact building ships of such dimensions. To this criticism Senator Byrnes, in charge of the Bill, replied that, according to the best information available to the United States Government, Japan was undoubtedly building three battleships of between 42,000 and 46,000 tons, the last laid down being of the latter displacement.

Earlier in the year the proposed insertion into the Naval Air Base Bill of a provision whereby \$5,000,000 would have been expended on harbour improvements on the island of Guam, in the Western Pacific, was defeated by thirty-seven votes in the House of Representatives, though all the other provisions of the Bill, including those for eleven major bases, were authorised.

It had previously been explained by Admiral Leahy, the late Chief of Naval Operations, that Guam was of "inestimable value" to the United States. He described the duty of the Navy as the engaging of a possible enemy at a point sufficiently remote from the continental area of the United States to assure that there was no interruption of the normal activities of the country. It was thus of vital importance that the Republic should possess a strong fleet, free to move from the Atlantic to the Pacific, with adequate continental and outlying bases.

Hawaii and Panama were important links in the lines of defence, the safeguarding of which could be improved by the development and use of bases in the Caribbean Sea, in mid-Pacific, and in Alaska, such as those provided for in the Bill. Guam Island, as a fortified base, would act "as a strong deterrent to any foreign Power contemplating a hostile move towards the Hawaiian Islands or the continental United States." Indeed, no enemy would be likely to attempt to cross the Pacific if impregnable defences were established at Guam, as it would be too dangerous to leave that kind of defence behind him.

The island also possessed an immediate value as a link in the chain of movement of naval patrol aircraft to the Philippines, and of commercial aeroplanes traversing the Pacific. It would be important as an air and submarine base to protect American overseas commerce with the Dutch East Indies, where materials essential to domestic industries were obtained. It would have a still greater value as a naval station on which could be based the American Asiatic Fleet after the withdrawal of the United States from the Philippines in 1946, beyond which date it was not the policy of the Navy Department to defend that group.

A new Vinson Act, introduced in December, 1939, will authorise a 25 per cent. increase in naval tonnage, involving the ultimate construction of seventy-seven new warships with an aggregate displacement of 369,000 tons.

The National Defence budget submitted to Congress in the following month includes a sum of \$369,000,000 which it is proposed to expend on naval construction.

BATTLESHIPS.

Though few official details have been released, it is gathered that the two 45,000-ton battleships mentioned above will mount a main armament of nine 16-in. guns, the same as carried by the 35,000-ton ships already in hand. Apparently the intention is to utilise much of the extra weight in increased engine and boiler space and larger fuel supply, enabling high speeds to be maintained over a considerable period if necessary.

A statement made in January last by Admiral Harold R. Stark, Chief of Naval Operations, suggested that the two battleships of the 1940 programme might displace as much as 50,000 to 52,000 tons, but that this was regarded as the limit of size desirable.

A list of the new battleships authorised is as follows :—

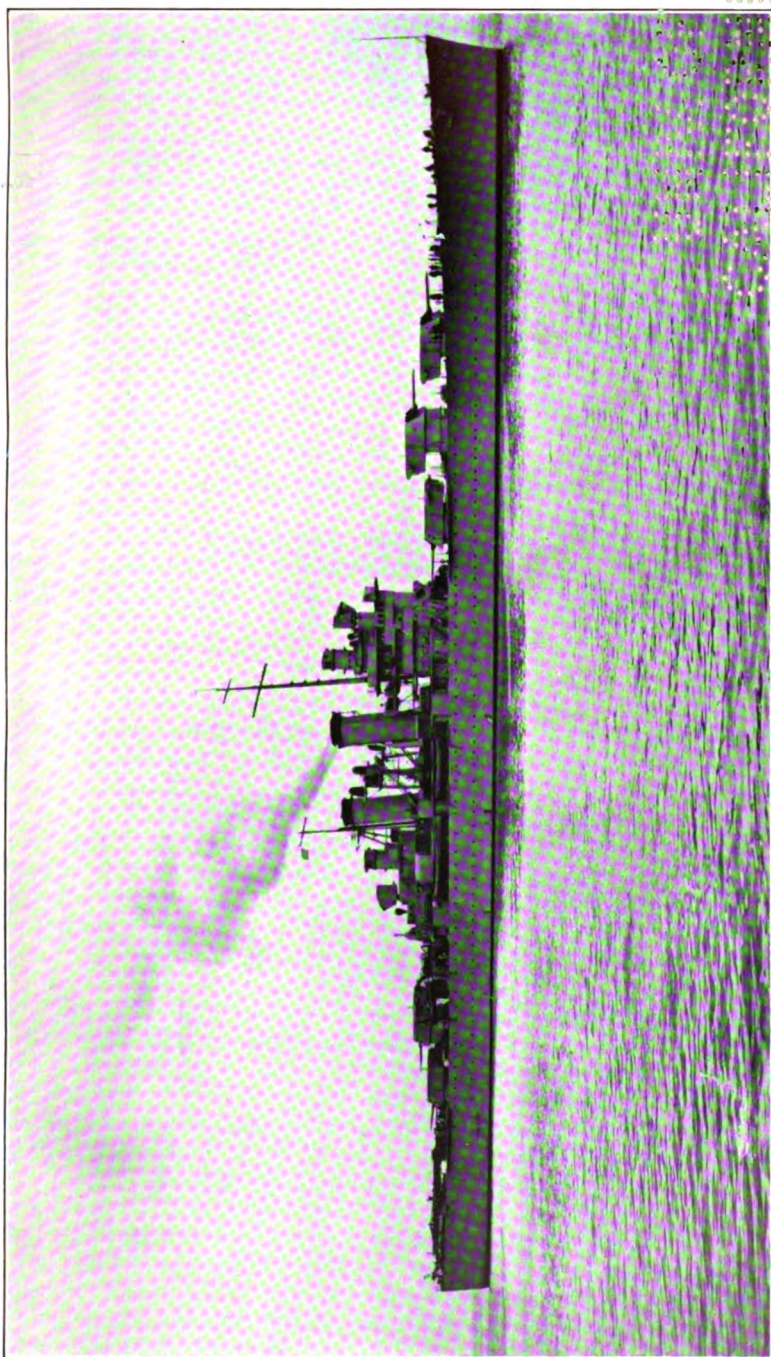
1936-38 Programme.—Two ships, of 35,000 tons.

North Carolina, laid down at New York Navy Yard on October 27, 1937, and to be launched in June, 1940. Though officially due for completion in November, 1941, it is possible that the date will be later.

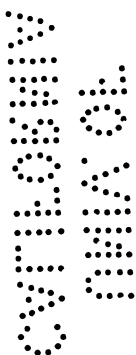
Washington, laid down at Philadelphia Navy Yard on June 14, 1938, and due for completion in October, 1942.

1938-39 Programme.—Four ships, of 35,000 tons.

South Dakota, laid down by the New York Shipbuilding Corporation on July 5, 1939, for completion in 1943.



UNITED STATES CRUISER ST. LOUIS.
(Official U. S. Navy photograph, by courtesy of the Navy Department.)



Alabama, ordered to be built at Norfolk Navy Yard ; Indiana, ordered from the Newport News Shipbuilding Company ; and Massachusetts, ordered from the Bethlehem Shipbuilding Corporation, Quincy. None of these had apparently been laid down up to the end of 1939, though contracts were placed a year earlier. For this reason it is to be doubted if any of them will be ready before 1944.

1939-40 *Programme*.—Two ships, of 45,000 tons.

Iowa, ordered to be built at the New York Navy Yard, and New Jersey, at the Philadelphia Navy Yard. Presumably they will replace the North Carolina and Washington upon the slips when those two ships are launched, some time in 1940.

1940-41 *Programme*.—Two ships, of 45,000 tons or more (*vide* foregoing remarks by Admiral Stark).

It should be observed that all these ships are understood to have been designed with a beam of 108 feet, to enable them to pass through the Panama Canal locks with a clearance of 2 feet. This disposes of a recent suggestion in the House of Representatives that, with the disappearance of Treaty restrictions, battleships of 65,000 tons should be built, for on that displacement it would hardly be possible to produce a satisfactory design without increasing the beam.

The battleships Colorado, Maryland, West Virginia, California, and Tennessee are to be refitted and modernised, provision for the starting of this work being included in the 1940 Estimates.

AIRCRAFT CARRIERS.

Some further particulars of the two aircraft carriers under construction are now available. Apparently the Hornet will be more or less a replica of the Enterprise and Yorktown, vessels of 19,900 tons with a speed of 34 knots, completed in 1938. The Wasp, of 14,700 tons, was launched in April, 1939 ; she is understood to be a slightly modified version of the Ranger, completed in 1934, with eight 5-in. guns of 38 calibres in place of the 25-calibre weapons mounted in the latter. A third aircraft carrier is to be begun under the 1940 programme.

CRUISERS.

The 10,000-ton heavy cruiser Wichita, completed last year, differs somewhat in appearance from the seven preceding vessels of the "Minneapolis" class. Her four aircraft are carried under the quarterdeck instead of in a conspicuous hangar at the foot of the mainmast, in this respect rather resembling the nine light cruisers of the "Brooklyn" type, all of which have now been completed.

Contracts have been placed for the four light cruisers of the 1938 programme. The Atlanta and Juneau will be built by the Federal Shipbuilding and Dry Dock Company, Kearny, N.J., and the San Diego and San Juan by the Bethlehem Shipbuilding Corporation, Quincy, Mass. They will be ships of 6,000 tons, with a speed of 38 knots, and are intended for use as flagships of destroyer squadrons, as groups of flotillas are termed in the U.S. Navy. Unlike larger American cruisers, they will carry torpedo tubes.

The Cleveland and Columbia, authorised under the 1939 vote,

were to have been ships of 8,000 tons, but as stated in the opening paragraph of this chapter, they will probably be re-designed. It is expected that one will be built in a Navy Yard and one by contract. Two cruisers to be laid down under the 1940 budget are not likely to be of less than 10,000 tons displacement.

DESTROYERS.

At least thirty destroyers are under construction at present, most of these being of the 1,630-ton type, though some half-dozen of the earlier 1,570-tonners remain incomplete. These latter are armed with five 5-in. guns and twelve torpedo tubes; but there is some likelihood of the bigger vessels being given six guns and ten tubes. A good deal of trouble has admittedly been caused through recent destroyers proving unstable, but it is officially stated that this has been overcome, as much as sixty tons of ballast having been added to some. It is believed that in future the unusual height at which torpedo tubes have been mounted may be reduced in consequence. A number of the 1,500-ton destroyers delivered during 1939 were delayed by difficulties with their high-pressure and superheated boiler installations; on the other hand it is known that several have exceeded their contract speed of 36·5 knots by considerable margins.

Some seventy of the laid-up destroyers of the "flush deck" type, built in the last war, have lately been refitted and recommissioned for patrol service off the Atlantic coast. Included in their number are several vessels which had been officially stricken from the list as non-effective. Two others have been partially disarmed and fitted for duty as seaplane tenders, and a third, after being similarly dealt with, is now classed as a transport.

Eight destroyers are to be begun under the 1940 programme.

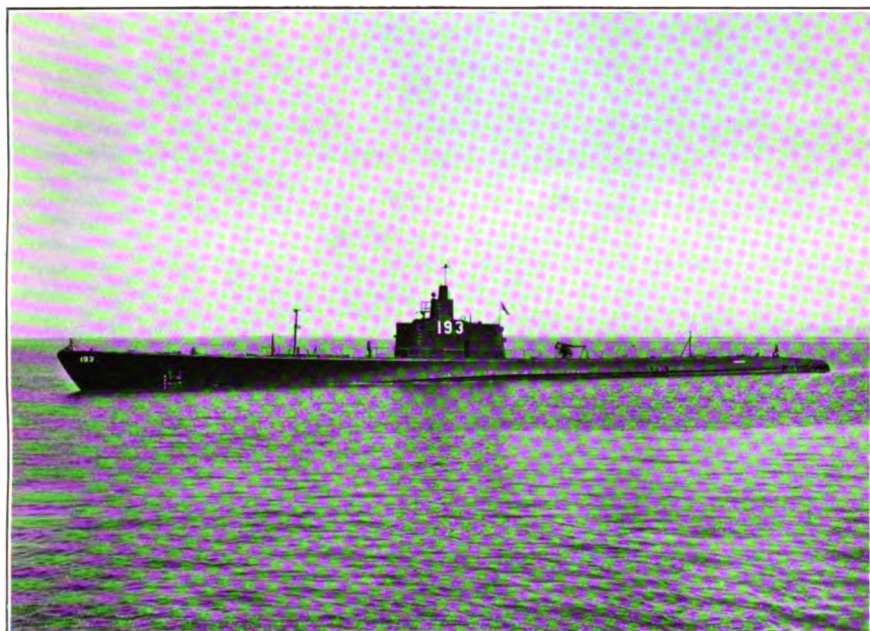
SUBMARINES.

There are nineteen submarines in various stages of construction, in addition to the *Squalus*, which foundered with the loss of twenty-six lives on May 23, 1939, through an induction valve failing to close, but has since been salvaged. It is likely to be a year before she is again ready for service, counting from the date of her being brought into port last September. In view of the depth in which she sank—40 fathoms—her salvage was a highly creditable achievement.

Six more submarines are to be built under the 1940 programme, and three old ones, the *Argonaut*, *Narwhal*, and *Nautilus*, are to be modernised, new engines being the main item of expenditure.

NAVAL AIR SERVICE.

Included in the 1939-40 programme is provision for 3,000 or more additional aircraft. These, it is stated, will go to strengthen the defences not only of the continental area but of Alaska, Hawaii, Puerto Rico, and the Panama Canal Zone. In the strength of her Naval Air Service the United States will thus be brought still further ahead of other Powers.



UNITED STATES SUBMARINE SWORDFISH.
UNITED STATES DESTROYER JOUETT.
(Official U.S. Navy photographs, by courtesy of the Navy Department.)

TO WHOM
ADDRESS

PERSONNEL.

Owing to the death last year of the Secretary of the Navy, Mr. Claude A. Swanson, this office was left vacant for some time, but has now been filled by the appointment of the Assistant Secretary, Mr. Charles Edison, to the vacancy. Admiral Harold R. Stark has relieved Admiral William D. Leahy as Chief of Naval Operations, and Rear-Admiral Robert L. Ghormley has become Assistant Chief of Naval Operations in succession to Rear-Admiral J. O. Richardson.

The latest figure for the total strength of the personnel of the U.S. Navy is 12,142 officers and 175,250 men, figures which it is hoped to attain in 1941. This includes the Marine Corps, but not the reserves, which comprise 14,790 officers and 55,464 men.

FLEET MOVEMENTS.

In April, 1939, the United States Fleet, which was to have remained in the Atlantic until June, was ordered back to the Pacific. In Japan this unexpected movement had a telling effect, strengthening the hands of opponents of the policy of alliance with Germany.

Many foreign men-of-war visited New York for the World's Fair celebrations in May. Among their number were four British cruisers, H.M.S. Berwick, flagship of Vice-Admiral Sir Sidney Meyrick ; the Exeter, wearing the broad pendant of Commodore Harwood ; the Southampton, flagship of Rear-Admiral G. F. B. Edward-Collins ; and the Glasgow.

JAPAN.

There is still no end to the operations in China, to which Japan is so deeply committed that, however much she would like to withdraw and cut her losses, she cannot extricate herself without loss of "face." Yet there are many increasingly urgent reasons why she should wish to call a truce in order to recuperate.

In spite of the already difficult financial position, the naval budget for 1939-40 showed a big increase on that for the preceding year, which at 680 million yen amounted to one-fourth of the entire expenditure of the country. Yet it has now gone up to over 826 million yen, rising costs of materials and the heavier amounts demanded for new construction being responsible for this big jump in the figures. Moreover, a five-year Fleet Replenishment Law was introduced in the Diet on February 1, 1940. It provides for the disbursement during the years 1940-44 of 5,401 million yen, of which 3,458 million yen are assigned to new construction ; 436 million to the rearmament of existing ships ; 988 million to shore establishments ; and 519 million to the Air Service. Obviously taxation cannot be charged with all this expenditure, and Japanese credit will be strained to provide the balance on reasonable terms.

BATTLESHIPS.

It is believed that three, and possibly four, capital ships are under construction, but official information on the subject is still

non-existent. That they are ships of over 40,000 tons may be regarded as fairly certain, while a gun calibre of 16-in. is also a reasonably safe assumption. From what is known of Japanese ship-building resources, it is to be presumed that the ships are being built in the Navy Yards at Kure and Yokosuka and the private yards of the Mitubisi and Kawasaki concerns at Nagasaki and Kobe, respectively. Ships reported as having gone afloat during 1939 which may, though with a decided element of doubt, be identified with the battleships believed to be building are the Nisshin, launched at Kure on November 30; the Zuikaku, at Kobe on November 27; and the Kadokuru, at Yokosuka on June 1. A French report suggests that the last-named ship may be a battle cruiser of 16,000 tons, but the rumour that vessels of this type are in hand rests on such slender foundation that entire reliance cannot be placed upon it. A third possibility that has been mooted is that the Kadokuru is an aircraft carrier.

AIRCRAFT CARRIERS.

The second 10,050-ton aircraft carrier Hiryu has now been completed, and differs but little from her sister ship, the Soryu. A third, the Syokaku, was launched at Yokosuka on June 2. There is considerable ground for the belief that she is of a different and decidedly larger design. Whether she is to be identified with the Koryu, previously reported to be building at Yokosuka, or whether the latter is actually under construction at Kure, as stated in some quarters, is not certain, but it is probable that the total number of aircraft carriers in hand is not less than three.

Both the Akagi and Kaga, of 26,900 tons, have been reconstructed, their flight decks having been extended over the bows and a small island superstructure added on the starboard side.

CRUISERS.

Further particulars of the cruisers Tone and Tikuma have been received, according to which they are understood to carry all twelve of their 6.1-in. guns forward, in three triple turrets, leaving the whole of the quarterdeck free for the accommodation of aircraft.

Two cruisers launched during 1939 from the Mitubisi shipyard at Yokohama, the Katori and Kasima, are said to be of small size and to resemble the escort vessels Tachin and Meklong, built in Japan for the Royal Thaiian (Siamese) Navy. It is possible that they are actually minelayers, but one report suggests that they are designed as seagoing training ships for cadets.

At least five cruisers of 7,000 tons are believed to be under construction, but no particulars of their design have yet been received. Two unidentified ships, the Hasidate, launched towards the end of last year, and the Kasino, launched at Nagasaki on January 26, 1940, may belong to this class.

MISCELLANEOUS VESSELS.

Eleven destroyers of large size, reported as in the neighbourhood of 2,000 tons, have been launched between September, 1938, and October, 1939. So far as can be ascertained, they are enlarged editions of the 1,500-ton "Asasio" class, with slightly greater speed but no heavier armament.

Submarines with numbers ranging from I9 to I24 have been ascertained to be building or completing. Eight of these appear to be of 1,500 tons, and the remaining eight of about 2,000 tons, evolved from the "I6" design. The submarine I63, sunk by collision on February 2, 1939, was raised and brought into port a year later. Particulars of this salvage undertaking have not been published.

Three second-class minelayers, the Sokuten, Sirakami, and Narifu, have entered into service, and three other vessels, believed to be gunboats, the Fusimi, Sumida, and Sumisu, were launched during 1939. The Takasaki and Turugizaki, of 12,000 tons, hitherto understood to be oilers, are now officially stated to be submarine depot ships.

FRANCE.

Though efforts have been made during the past year to accelerate the construction of the many warships on the stocks, there is still a great deal of leeway to be made up in various directions. Altogether there appear to be under construction or on order fully one hundred vessels of various descriptions, irrespective of motor torpedo boats. Some of these ships were authorised as far back as 1934, but the majority, of course, come under the series of Estimates passed in 1938-39, referred to in France under the short titles of *Loi du 31.12.37*; *Décret du 2.5.38*; and *Loi du 12.4.39*, or still more briefly as *Tranche 1938*, *Tranche 1938 bis*, and *Tranche 1938 c*. Together these provide for a total expenditure of 13,787 million francs, exclusive of sundry supplementary credits, such as the one providing for the replacement of the lost submarine *Phénix*.

BATTLESHIPS.

Two of the 35,000-ton battleships in hand left the stocks last year, the *Richelieu* being floated out of dry dock at Brest in January and the *Jean Bart* being launched at St. Nazaire in November. The former has been replaced on the slips by the keel of the sister ship *Clemenceau*. According to the French naval annual "*Les Flottes de Combat*," these battleships follow the Dunkerque design in its main features, but with a single funnel of most eccentric shape, the uptake being trunked aft on quite a novel plan, with the mainmast attached to it somewhat after the German fashion.

Particulars given last year of the *Strasbourg* were not quite exact. Her armament, in addition to eight 13-in. and sixteen 5.1-in., comprises four 47-mm., eight 37-mm. A.A., and thirty-two anti-aircraft machine-guns. The complement is 66 officers and 1,365

D

men. It should be noted that this ship and her sister, the Dunkerque, are officially rated, like the "Richelieu" class, as *Bâtiments de ligne (cuirassés)*.

AIRCRAFT CARRIERS.

Both the aircraft carriers of 18,000 tons ordered under the initial programme for 1938, the Joffre and Painlevé, are being built by the Chantiers et Ateliers de St. Nazaire-Penhoët. Except that they will be armed with eight 5·1-in. guns and are to have a speed of 32 knots and a certain amount of protection, little information has been released concerning them. It is hoped to complete both ships before 1942.

CRUISERS.

All three of the 8,000-ton cruisers De Grasse, Chateaurenault, and Guichen have been laid down, their respective builders being Lorient Naval Dockyard ; Forges et Chantiers de la Méditerranée, La Seyne ; and Forges et Chantiers de la Gironde, Bordeaux. They will be armed with nine 6-in. and eight 3·5-in. A.A. guns, and will thus be slightly enlarged editions of La Galissonnière ; but instead of the two funnels of that type, there will be a single one, affording more deck space and enabling two catapults to be carried instead of one.

In September last the cruiser La Tour d'Auvergne, better known under her former name of Pluton, caught fire and blew up at Casablanca, unfortunately with considerable loss of life. She had been refitted for service as a training cruiser, but would doubtless have reverted to her former status of cruiser-minelayer had she survived.

DESTROYERS.

So successful have the giant destroyers Mogador and Volta, of 2,884 tons, proved in service that four more of this type have been ordered, the Desaix and Kléber from the Ateliers et Chantiers de France, Dunkirk ; the Marceau from the Ateliers et Chantiers de Bretagne, Nantes ; and the Hoche from Lorient Naval Dockyard.

Though Le Hardy, the first of a dozen destroyers of 1,772 tons, is in service, the remainder are still under construction, though about half of them have been launched. Four, like Le Hardy, were laid down in 1936, one in 1937, two in 1938, and the rest in 1939. Of the new series of fourteen *Torpilleurs légers* of 994 tons, all are believed to have been begun last year. They are to be armed with four 3·9-in. guns as compared with the six 5·1-in. of Le Hardy and eight 5·5-in. of the Mogador.

SUBMARINES.

Submarines in hand number twenty-five, including the new Phénix referred to above. The Roland Morillot, of the 1934 programme, and La Praya, of the 1937 programme, will be vessels of 1,500 tons, but La Martinique, La Guadeloupe, and La Réunion,

though of the same general type, will displace 1,605 tons. In their high speed (23 knots) they resemble the British "Thames" class. Four 669-ton minelayers, the *Emeraude*, *Agate*, *Corail*, and *Escarboucle*, and fifteen of the "Aurore" class, which will displace 893 tons, are also in hand, the only one so far reported to have been launched being the *Aurore*, belonging to the 1934 programme, which took the water in July last.

MISCELLANEOUS.

Good progress has been made with the series of twenty-five mine-sweepers of 630-647 tons, at least seventeen of them having been launched up to the end of last year. Those completed have already done good service in the war, their speed of 20 knots rendering them excellent anti-submarine patrol vessels. The Admiral Mouchez, of 719 tons, in peace time a surveying ship, has also proved useful in this respect. Two other surveying vessels, the *Beautemps-Beaupré* and *Lapérouse*, though originally intended for hydrographic work, will be completed as escort vessels, identical with the new *Ville d'Ys*.

As authorised under the 1938 Estimates, a dozen trawlers are reported to have been acquired for service as auxiliary mine-sweepers. Four aircraft tenders, of 1,172 tons, are due for completion this year, as is the wireless-controlled target ship *Impassible*, notable as being the first vessel to be designed and built for this duty.

It was on June 15 that the submarine *Phénix* failed to reappear after a practice dive in Kamranh Bay, Indo-China. With her were lost her entire complement of seventy-one officers and men. On August 7 a motor torpedo boat, B9, broke in two after an explosion while travelling at 35 knots through a heavy sea in the Channel, the captain and a rating being drowned.

On the outbreak of war a French Naval Mission under Rear-Admiral Odend'hal arrived in London, and has done much to facilitate the liaison between the British and French Navies.

GERMANY.

In February, 1939, it was announced that the Kiel Canal was to be widened, a measure which suggested that it was Germany's intention in the future to build battleships of more than 35,000 tons displacement. No details were given to indicate the extent of the proposed alterations, nor was it stated when the work was to be started.

On April 27, 1939, Germany repudiated the Anglo-German Naval Agreement concluded on July 17, 1937, while expressing her desire that the "qualitative provisions" of the Agreement should remain unaffected. It was not made clear whether the Government of the Reich still regarded itself as bound to restrict the number of 10,000-ton 8-in. gun cruisers to the five allowed under the Agreement, or only to observe the definition clause limiting "light surface vessels" to 10,000 tons and 8-in. guns.

Considerable public interest was aroused by the German Navy's choice of the Western Mediterranean for its spring cruise, starting on April 18. The squadron which carried out this cruise under Vice-Admiral Böhm included two armoured ships (the so-called "pocket battleships"), two cruisers, two divisions of destroyers, three flotillas of submarines, and a number of escort vessels, depot ships, etc. Tangier, Ceuta, and various Spanish ports were visited by these ships, which were back again in German waters on May 17. During their cruise a French squadron, decidedly superior in strength to the German force, paid an official visit to Gibraltar.

BATTLESHIPS.

There are only two completed battleships in the German Navy at present, the Gneisenau and Scharnhorst, of 26,000 tons, each armed with nine 11-in. guns. Both are officially rated as *schlachtschiffe*, or battleships; but the surviving "pocket battleships," Admiral Scheer and Deutschland, are classed as *panzerschiffe* (armoured ships). In fact, it is questionable whether the two surviving ships of this class should not be counted merely as armoured cruisers, the category to which they most closely approximate. The official announcement that the Deutschland has been renamed Lützow has not unnaturally given rise to the suspicion that she may have been lost.

Two 35,000-ton battleships are in process of completion, the Bismarck, launched in February, 1939, and the Tirpitz, launched in April of the same year. A second pair should be due for launching in the course of 1940-41. All are understood to be armed with eight 15-in. and twelve 5.9-in. guns. Thus Germany has at last abandoned her traditional policy of saving weight by mounting guns of lighter calibre than the average as the main armament of her capital ships.

AIRCRAFT CARRIERS.

So far as is known, only one of the two 19,250-ton aircraft carriers in hand has yet been launched. This is the Graf Zeppelin, which entered the water in December, 1938, and should now be well on the way to completion. Possibly she will undertake Germany's next campaign against ocean commerce. Her armament includes sixteen 5.9-in. and ten 4.1-in. A.A. guns. From her launch appearance, the sides appear to be armoured for about two-thirds of the length, and to a slighter extent as far as the bow, which is of bulbous form.

CRUISERS.

The 10,000-ton cruisers Blücher and Admiral Hipper, each armed with eight 8-in. guns, have both entered into service, though one is reported to have been severely damaged by the torpedo attack of H.M.S. Salmon. It is possible, though unlikely, that the third ship, the Prinz Eugen, will be ready before the end of the summer. The

remaining two of the class, the Seydlitz and Lützow (now to be renamed), were both launched last year; these are the ships formerly referred to as "K" and "L."

There is no further news of the progress of the four 6-in. gun cruisers, "M," "N," "O," and "P," though it is probable that two of them have reached the launching stage. According to French reports, they will mount twelve 5.9-in. guns in triple turrets. If this is true, it may be assumed that their displacement is not less than 8,000 tons.

Of the older cruisers, the Leipzig and one of the "Königsberg" class, each displacing 6,000 tons, are believed to have been sunk by British submarines in December, 1939. One of the latter type is understood to have been in company with the Deutschland when she sank the armed merchant cruiser Rawalpindi.

TORPEDO CRAFT.

When war began, Germany had twenty-two destroyers in service, six of the 1,811-ton type and the others of the 1,625-ton "Maass" class. All alike are armed with five 5-in. guns and eight 21-in. torpedo tubes, and have a speed of 36 knots. At least eight more are under construction.

Torpedo boats include twelve of 800 tons, dating from 1926-28, and at least as many new ones of 600 tons. Eighteen more of the latter type are building or completing. Motor torpedo boats number thirty-two.

SUBMARINES.

On September 3, 1939, the number of submarines at Germany's disposal, either in commission or on the point of delivery, was 71. There were 28 more under construction, besides two which were building at Kiel for the Royal Yugoslav Navy and have probably been taken over by the Reich. Of the total of 101, two are believed to be large minelayers of between 1,100 and 1,200 tons; 24 of the 712-740-ton ocean-going type; 41 of the sea-going classes, displacing 500 tons or more; and the remaining 34 of the 250-ton coastal type. How many are in service to-day it is impossible to say, though there is reason to suppose that losses up to the end of January last exceeded 40. Undoubtedly many more U-boats are building, but the problem of finding trained crews must be causing the German submarine command considerable anxiety.

PERSONNEL.

Three days before Christmas, 1939, it was officially announced that Vice-Admiral Marschall, in command of battleships, had been promoted to the rank of Admiral.

No exact figures of the strength of German naval personnel are available, but the total has been reported as 75,000 officers and men.

WAR LOSSES.

In addition to the Admiral Graf Spee, Leipzig, a cruiser of the "Königsberg" class, and a large number of submarines, referred to above, the German Navy has lost at least seven vessels in the Baltic minefields lying off the Swedish peninsula of Falsterbö, and another off the west coast of Jutland. Some of these are apparently mine-sweepers, others armed trawlers, and one seems to have been a motor launch. One was sunk in September, one in October, two in November, and three in December, 1939, and one in January, 1940. No doubt there have been other losses of which the news has not been made known.

ITALY.

A further increase of nearly 700 million lire is recorded in the naval budget for 1939-40, which amounts to 2,708 million lire. This is in pursuance of the declared intention of bringing the Italian fleet up to a strength of 700,000 tons by 1941, including the four new 35,000-ton battleships of the "Littorio" class.

BATTLESHIPS.

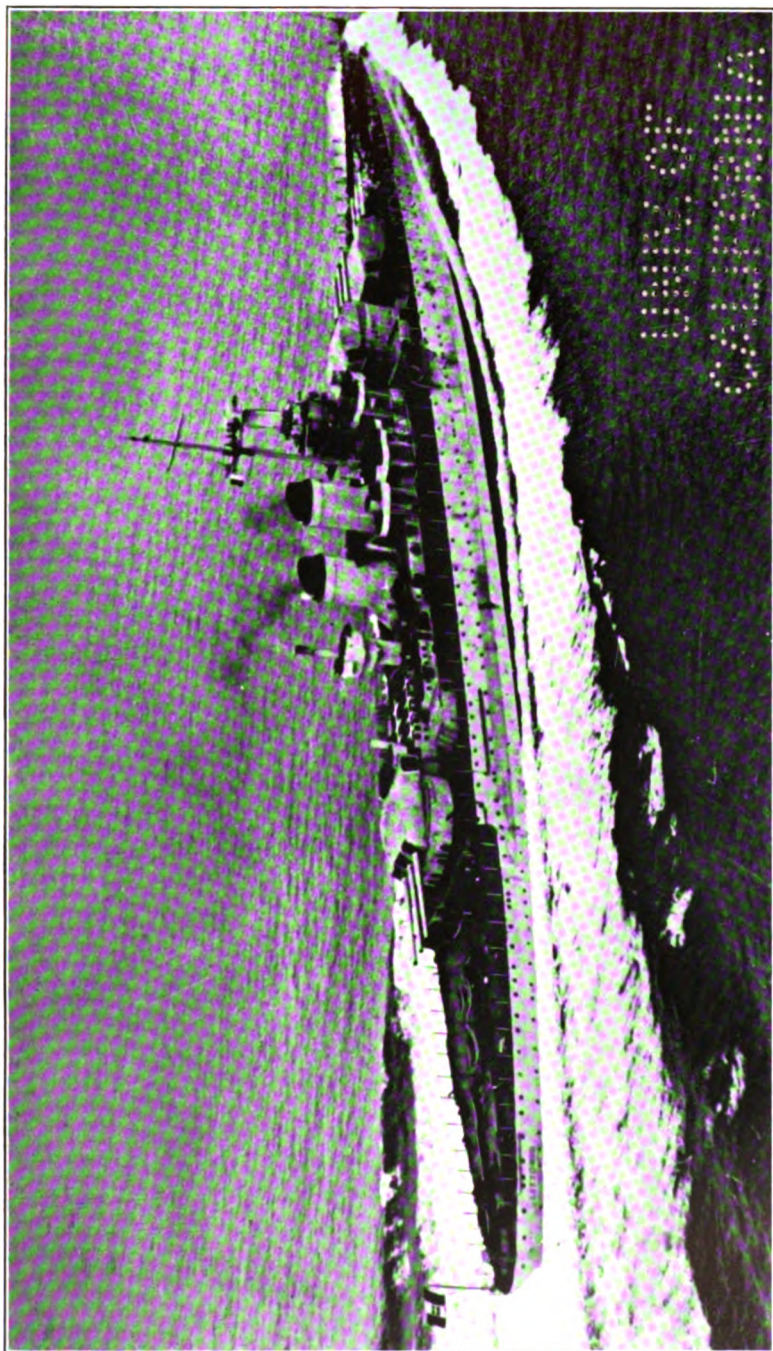
The Littorio and Vittorio Veneto, of 35,000 tons, have now been completed, an illustration of the former ship being given here. Their characteristics include a main armament of nine 15-in. guns and a contract speed of 30 knots, which is said to have been exceeded on trials during December, 1939. Since they were laid down in October, 1934, they have been a trifle over five years under construction. But more rapid progress is being made with the third and fourth ships of the class, the Impero having been launched from the Ansaldo yard at Sestri Ponente, Genoa, on November 15 last, after having been on the stocks for only eighteen months.

This year it is hoped to complete the reconstruction of the old battleships Andrea Doria and Caio Duilio, which is proceeding on similar lines to the modernisation of the Conte di Cavour and Giulio Cesare.

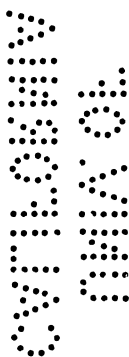
CRUISERS.

All twelve cruisers of the "Regolo" class were laid down in the course of 1939. Official details of these ships show them to be of 3,362 tons standard displacement, with a length of 444 feet on the water line. They are to be armed with eight guns of the new 5.3-in. calibre and an equal number of torpedo tubes. Minelaying equipment will be included in the design. Geared turbines of 120,000 S.H.P. will give them a speed of 41 knots, the highest figure ever stipulated in a cruiser contract. In the general features of their design they are expected to resemble the Russian destroyer Tashkent.

Under the 1939 programme, two cruisers of 8,000 tons, with a main armament of ten 6-in. guns, were provided for, one of which, the



ITALIAN BATTLESHIP LITTORIO.
Completed for service 1939.



Ammiraglio Costanzo Ciano, is believed to have been ordered last year. She is named after the father of the Italian Foreign Minister.

DESTROYERS, Etc.

All twelve of the 1,620-ton destroyers of the "Aviere" class have passed into service. Eight more destroyers are to be built under the 1939 programme, together with four torpedo boats. Italy now possesses sixty-one destroyers, two of which are likely to be discarded very soon, and seventy torpedo boats, of which about 10 per cent. are due for scrapping. Motor torpedo boats number about seventy, and more are to be provided under the 1939 Estimates.

SUBMARINES.

With the reputed exception of Russia, Italy has the strongest submarine force in the world. In completed vessels the total is not fewer than 106, with twenty-three more building or completing, twelve of which are in the 1939 programme. One class under construction at present includes an unusual feature—fourteen 18-in. torpedo tubes. It would seem that this armament is based on the theory that more damage can be done by means of these than with a smaller number of 21-in. tubes.

MISCELLANEOUS.

In January, 1940, the Italian Navy took over 116 fishing trawlers, of which eighty-five are stated to be intended for minelaying—or more likely minesweeping—duties. There is no doubt that Italy, in common with other naval Powers, has viewed with great interest the development of German mining in traffic channels and the retaliatory measures taken by the British Navy. Hitherto the minesweeping flotillas of the Italian fleet have been composed chiefly of thirty-nine small tugs of about 150 tons, with an average speed of 13 knots. During the past two or three years three motor minesweepers have been added to this force. There are eighteen coastal minelayers, while all the Italian destroyers, eight submarines, two old cruisers, and sundry other vessels are equipped for minelaying.

Last year's fleet exercises, which took place in the Central Mediterranean in the last week of July, and occupied a week, were attended by a German naval mission under Admiral Grossmann. A month earlier a special training cruise was undertaken by the First Squadron, comprising over thirty ships, which in the course of a fortnight visited Tangier, Lisbon, and various Spanish ports.

SOVIET UNION.

Since the analysis of Russian naval strength which appeared in last year's "Brassey" was written, there have been numerous high-sounding statements by Soviet officials concerning the might of the Red Navy. When analysed, there is found to be a certain vagueness about these boasts, which is explained when examination

reveals the slow progress made in the delivery of important new ships.

One result of the many purges which the fleet, in common with other Soviet institutions, has recently undergone has been the emergence as Komissar for the Navy of a flag officer named Nikolai Kuznetsov. It remains to be seen how long he will remain in office.

BATTLESHIPS.

Although statements have appeared in the Press to the effect that a 35,000-ton battleship was laid down at Leningrad in the Orjonikidze yard, on July 15, 1939, and a second one at Nikolaiev later in that year, the evidence to this effect is somewhat slender. A naval mission which recently visited the United States under Admiral Isakov, Commander-in-Chief of the Baltic Fleet, is said to have been engaged in the purchase of the necessary materials for these ships, but all the reports in this connection are more or less indefinite.

Certainly the three existing Russian battleships are overdue for replacement. Laid down in 1909 and completed in 1914-15, they have never been reckoned successful ships, and are now entirely obsolete, such modernisation as they have undergone being on a minor scale. One of them is said to have been damaged by the fire of Finnish batteries during December last.

AIRCRAFT CARRIERS

There is no news that can be relied upon to show that the aircraft carrier Stalin, of 9,000 tons, was actually completed last year as intended. She may still be undergoing trials, if indeed she has reached that stage. Nor is there any further word of the Krasnoye Znamya and a projected sister ship, the Voroshilov, of 12,000 tons, having been begun. One report suggests that the Stalin is in fact the Krasnoye Znamya re-named.

CRUISERS.

Fairly satisfactory evidence exists to show that both the Kirov and Maxim Gorki, of 8,500 tons, are in service, though the former is said to be under repair after being in action with Finnish forts. Their two sister ships in the Black Sea, the Kubyshev and Orjonikidze, are due for completion some time this year.

Further information discloses that the cruiser-minelayer Marti, which recently entered into service in the Baltic, is the ex-Imperial yacht Shtandart, launched at Copenhagen in 1895, and now rebuilt as a minelayer of 3,500 tons. She has been fitted to burn oil fuel and is said to have a speed of 25 knots.

DESTROYERS.

According to the latest information, destroyers recently completed or under construction include at least twelve, and possibly

sixteen, of the "Leningrad" type, displacing 2,900 tons. Six of these are believed to be in service, of which two are in the Baltic, three in the Black Sea, and one probably at Vladivostok. There is also the Italian-built Tashkent, of very similar type, delivered in the Black Sea last year, and about twenty of the "Stremitelni" class, which now prove to be of about 1,800 tons and not 2,600 tons as first reported. Nine of these may have been completed, one of which is claimed by the Finns to have been sunk in action with coastal batteries.

There also appear to be over twenty of the 700-ton torpedo boats of the "Shtorm" class, of which fifteen have certainly passed into service.

SUBMARINES.

If there is truth in any part of the official braggadocio already referred to, it is in regard to the large number of submarines of which the Soviet Navy can dispose. Exact figures are of course unobtainable, but a total of 150 probably does not exaggerate, and with boats under construction the figure is nearer 175. The Baltic Fleet recently included nearly seventy submarines of various types with twenty more building. Reliable observers in the Far East attest to the fact that there are nearly fifty based on Vladivostok, and there are a good many more in the Black Sea. But numbers do not connote efficiency, and were these vessels to be engaged in war with an up-to-date Navy, there is reason to suspect that the slaughter would be great. Probably the one department in which the Soviet Navy is really skilled is minelaying, the modern technique of which in all navies is largely based on the operations carried out by both sides in the Russo-Japanese War, thirty-five years ago.

SPAIN.

Since the Nationalist victory the Spanish Navy has undergone reorganisation, the many damaged ships being overhauled and refitted where required. So far as can be ascertained, the main strength of the fleet now consists of the old battleship Jaime Primo, which can no longer be reckoned as an efficient fighting unit, and will presumably be relegated to harbour service; the cruisers Canarias, Almirante Cervera, Miguel de Cervantes, Galicia (ex-Libertad), Navarra, and Mendez Nunez; nineteen destroyers; eight submarines; and over twenty torpedo boats, including several of the motor type.

Ships lost in the course of the war were the battleship España; the cruiser Baleares; the destroyers Almirante Ferrandiz and Churruca, though the latter may have been salvaged; and the submarines C6 and B6. Submarines B1, B3, B4, and B5 have been discarded as no longer fit for service, and C1, C3, and C5 are likely to be under repair for some time before they are seaworthy. The armed merchant cruisers Mar Negro and Mar Cantabrico, which did good service for the Nationalist cause, have returned to commercial duties.

Presumably work will now be resumed on the destroyers *Alava* and *Liniers* and the submarines *D1*, *D2*, and *D3*, laid down in 1936, whose construction was held up by the Civil War.

OTHER EUROPEAN COUNTRIES.

DENMARK.

The surveying vessel *Freja* and the three minesweepers of the "Søbjørnen" class have been completed, and the minelayer *Lindormen* should soon be ready for service. Two torpedo boats of 710 tons, the largest torpedo craft ever built for the Royal Danish Navy, were laid down at Copenhagen last year. They will be armed with two 4.7-in. guns and six 21-in. torpedo tubes. Two coast defence ironclads of 7,000 tons are projected.

FINLAND.

The Finnish Navy comprises two coast defence ships of 3,900 tons, each armed with four 10-in. guns, but with comparatively slight armour protection; five submarines; four gunboats; seven motor torpedo boats; and a number of craft of less importance. According to Soviet reports, one of the submarines has been destroyed.

GREECE.

The destroyers *Vasileus Georgios I* and *Vasilissa Olga*, of 1,350 tons, were both delivered by Messrs. Yarrow & Co., Ltd., in February, 1939. Their main armament consist of four 5-in. guns of German manufacture. Two more vessels of this type have been laid down in the Royal Hellenic Naval Dockyard at Scaramanga, their machinery and boilers having been ordered from Messrs. Yarrow. Four British trawlers have been acquired and fitted for minelaying and minesweeping, and a fleet oiler has been purchased and named *Argo*.

NETHERLANDS.

The largest programme of construction in the history of the Royal Netherlands Navy is now in hand. Excluding ships already delivered, it includes the cruisers *De Zeven Provinciën* and *Kijkduin*, of 8,350 tons, some description of which was given in these pages last year; a cruiser of 3,350 tons, the *Heemskerck*, which will be a sister ship to the *Tromp*, now in the East Indies; four destroyers of 1,628 tons, the boilers and machinery of which will be supplied by Messrs. Yarrow; seven submarines of 888 tons; seven gunboats of 1,268 tons; four minesweepers; six submarine chasers; thirty motor torpedo boats; an oiler; and sundry subsidiary craft.

Ships delivered during the past year have included the gunnery training ship *Van Kinsbergen*, two submarines, two minelayers, and a British-built motor torpedo boat, which is to serve as the pattern for nineteen more to be built in a Dutch shipyard.

In addition to all this activity, it is proposed to build three or four battle cruisers of 26,000 tons, with a speed of 33 knots, but so far financial considerations appear to have deterred the Government from following the recommendations of their naval advisers in this matter.

On April 28, 1939, Queen Wilhelmina, accompanied by Prince Bernard, attended naval exercises in the North Sea on board the cruiser Tromp.

NORWAY.

Six torpedo boats of the "Sleipner" class, of 597 tons, have now passed into service, and good progress is being made with the construction of two destroyers of 1,220 tons, laid down at Horten in April, 1939. They are to have a speed of 34 knots and an armament of four 4.7-in. guns and four 21-in. torpedo tubes. Two submarines have also been ordered and were recently begun at Horten. The 320-ton minesweepers Otra and Rauma have both been delivered.

POLAND.

In the course of the German attack on Gdynia and the Hel Peninsula, Poland lost, after a stout resistance, the destroyer Wicher, the minelayer Gryf, and the torpedo boat Mazur, with sundry other vessels of less importance. A number of river gunboats are reported to have been seized by the Soviet forces. The transport Wilja and training schooner Iskra were both outside the Baltic when war broke out, so escaped capture or destruction. The destroyers Blyskawica, Grom, and Burza left the Baltic on the eve of war, and are now serving with the British Fleet, as are the submarines Orzel and Wilk, which eluded the German destroyers hunting for them and passed out into the Kattegat during September. The Orzel in particular had a most adventurous cruise, breaking away from the port of Tallinn, capital of Estonia, into which she had put to land her sick captain, when it was found that it was proposed to intern her.

The Polish Navy thus remains a fleet in being, its headquarters under Rear-Admiral Swirski having been transferred to London.

PORTUGAL.

Contracts have still to be placed for the majority of the vessels provided for in the current programme of naval construction. Two fishery protection vessels, a surveying ship and an oiler are being built in the new Naval Dockyard at Alfeite, opposite Lisbon. Tenders were invited in 1939 for the construction of three submarines of 900 tons, but no orders resulted. A contract for the completion of the naval base at Alfeite, already alluded to, was secured by the Sociedade Italo-Portuguesa Construcões last July, subject to the work being finished in 440 days, the sum involved being £180,000.

ROUMANIA.

Two minelayers of 812 tons, of which one, the Admiral Murgescu, has already been launched, are building in the Naval Dockyard at Galatz. Two submarines have also been put in hand there. The sail training ship Mircea, built at Hamburg, was delivered on March 29, 1939.

SWEDEN.

The Navy Estimates for 1939-40 amounted to seventy million kronor, as compared with under fifty million kronor in the preceding year. Two coast defence ships of 8,000 tons, to be armed with four 10-in. guns and to have a speed of 23 knots, were ordered last year from Swedish shipyards. Five submarines, four motor torpedo boats, and a submarine depot ship were also ordered last year. Ships delivered comprised two destroyers, two submarines, and two minesweepers.

A considerable amount of reconstruction is in hand. The coast defence ship Åran has completed an extensive refit which has involved some alteration in her appearance. Vessels now in process of being rebuilt are the coast defence ship Sverige, cruiser Fylgia, and mine-layer Clas Fleming.

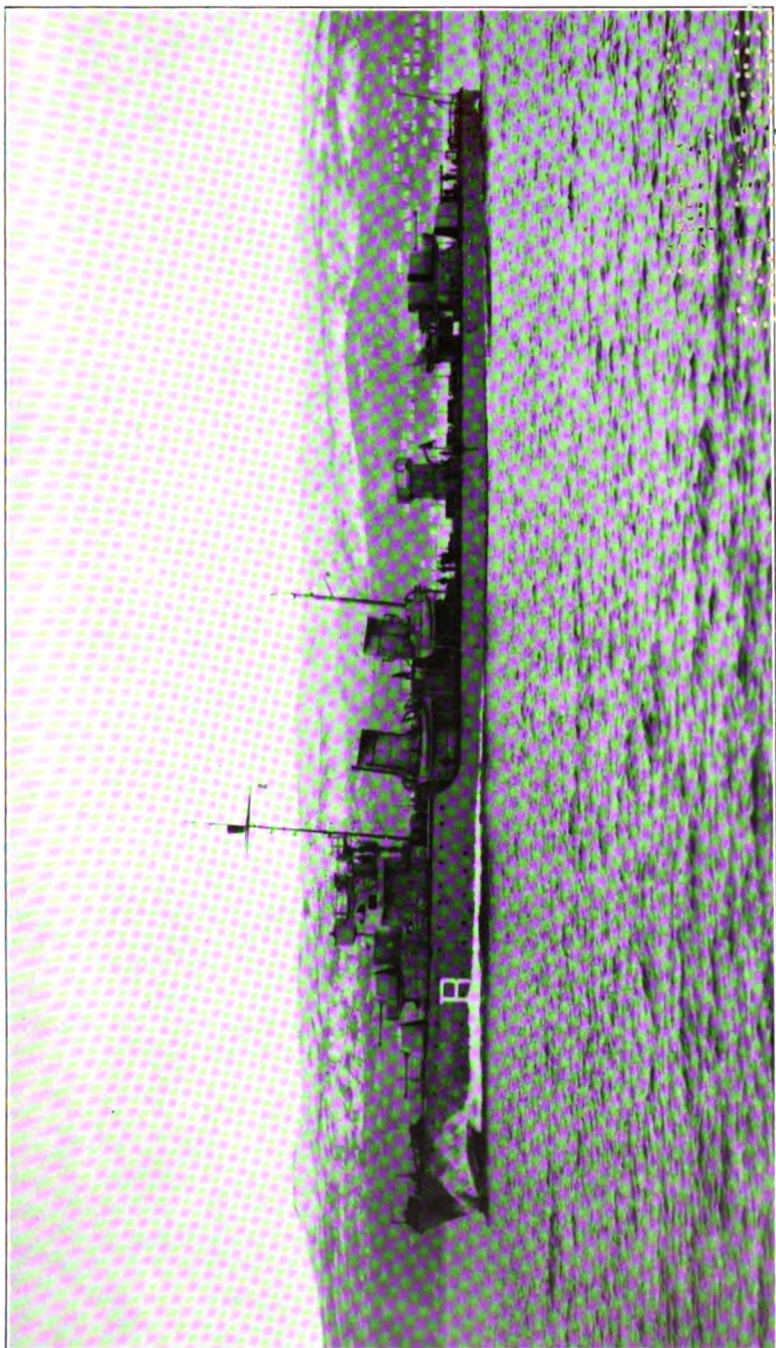
Hr. P. E. Sköld is now Minister of Defence, and Vice-Admiral C. F. Tamm Commander-in-Chief of the Navy.

TURKEY.

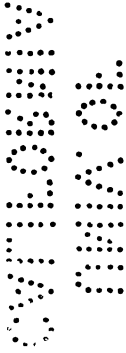
As foreshadowed in "Brassey" a year ago, orders have been placed in the United Kingdom for four destroyers of 1,360 tons, similar to the "Hero" class; four submarines of 683 tons, resembling the "Shark" type; and two minelayers of 350 tons. Two similar minelayers were recently completed in the Turkish Naval Dockyard at Gölcük. Both the submarines building in Germany, the Batiray and Saldiray, were delivered before war began.

YUGOSLAVIA.

The flotilla leader laid down at Split in October, 1938, is of 1,875 tons standard displacement; the boilers and machinery are to be supplied by Messrs. Yarrow. Though no larger, in other respects she will be an improved edition of the Dubrovnik, with somewhat greater horse-power and five 5.5-in. guns instead of four. All three of the 1,210-ton destroyers of the "Beograd" class have been completed, as well as a patrol vessel, the Bjeli Orao, of 640 tons, built in Italy last year. Unfortunately one of the former, the Ljubljana, was wrecked in the Adriatic in January of this year. In each of the ships of this class a speed of over 38 knots was maintained during an eight hours' continuous trial, reflecting great credit on Messrs. Yarrow & Co., who supplied the boilers and machinery. A Belgian-built oiler has also been delivered. Two submarines of 280 tons building at Kiel have doubtless been taken over by the German Navy.



YUGO-SLAV DESTROYER BEOGRAD.
(By courtesy of the builders, Messrs. Yarrow & Co.)



SOUTH AMERICAN COUNTRIES.

ARGENTINA.

The escort vessels *Murature* and *King*, building at Rio Santiago Naval Dockyard, are of 800 tons, with Diesel engines of 4,000 B.H.P., equal to a speed of 16 knots. It is understood that they are to be attached to the Naval College for the seagoing training of cadets. Both should soon be completed, together with the transport *Ushuaia*, building in the same yard.

BRAZIL.

Six destroyers under construction in England have been taken over by the Admiralty for the Royal Navy as a result of the war, and the Brazilian Naval Mission charged with their supervision has returned home. It remains to be seen whether contracts will be placed for replace ships in some neutral country. Various warships building in Brazil have been completed, with the exception of the three American-designed destroyers at Rio.

CHILE.

No further progress has been made with the new construction programme, which as modified was to have included two cruisers of 3,000 tons, two submarines, a transport, and a surveying vessel, except that the transport is completing in a Danish yard. A patrol vessel of 1,026 tons is being built at Valdivia.

ASIA.

JAPAN.

It is reported that the following ex-Chinese warships have been repaired and added to the Japanese Navy : *Ning Hai* and *Ping Hai*, modern cruisers of 2,500 tons ; *Yat Sen*, escort vessel of 1,650 tons ; the old cruisers *Hai Chi*, of 4,300 tons, *Hai Shen* of 2,950 tons, and *Chao Ho* of 2,600 tons ; the gunboat *Yung Chi* of 860 tons ; and three old torpedo boats of 90 tons. It would be interesting to know the new names that have been conferred upon these prizes.

THAI (FORMERLY SIAM).

Further particulars of the two cruisers ordered in Italy show them to be ships of 4,200 tons, with a speed of 30 knots and a main armament of six 6-in. guns. They will be the first sea-going ships of any size in the Royal Thai Navy, which has discarded most of its old vessels dating from the early years of the century.

FRANCIS MCMURTRIE.

CHAPTER III.

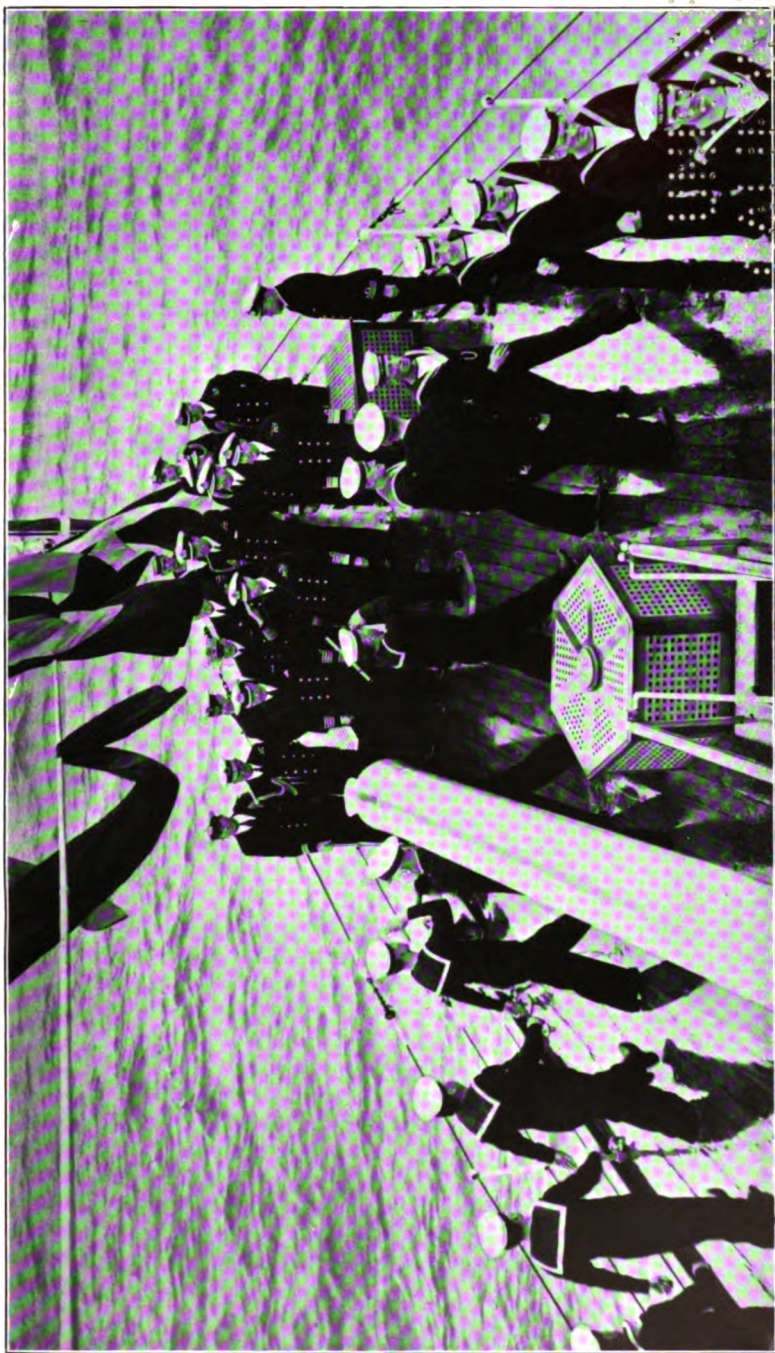
A NAVAL CHRONICLE.

II. WAR.

PARTICULAR aspects of the war at sea up to the end of 1939 are described in other chapters. Commander Pursey deals with the submarine campaign, Sir Archibald Hurd with the Merchant Navy in the war, and Major Stewart with air operations at sea. In this chapter, however, it will be the endeavour to chronicle the course of the war at sea as a whole, so far as the facts are available to the public at the time. The chronicle, like all contemporary accounts, is necessarily incomplete, for it is not possible to write real history, particularly of warlike operations, until official archives are laid bare for public reading ; and that is not to be expected until some years hence. But it should be of value to record the course of events as seen by the public at the time ; for on that is based the trend of public opinion, by which, in the end, the course of events is really governed.

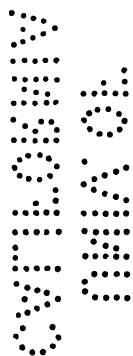
The outbreak of war on September 3 found the British Navy as nearly at full strength as it could be without the general mobilisation which is necessary before the numerous auxiliary vessels required by the Navy in war can be taken up, fitted out, and manned. The Reserve Fleet was mobilised, completed to full crews, and for nearly a month had been engaged in fleet exercises in conjunction with the Home Fleet. It was thus at a much higher pitch of efficiency than it could have been if mobilisation had been deferred until it had become quite certain that it was no longer possible to preserve peace. In short, the Reserve Fleet was at full strength instead of being the mere assemblage of ships with raw and untrained crews that it had been a month earlier.

Full mobilisation of the Navy had been ordered by Royal Proclamation only on August 31, when the international situation became critical. From that moment, although it was known that the full measure for bringing the Navy up to war strength were immediately put into operation, a veil fell over the measures themselves. It is possible to indicate what their nature was, for that is well known ; but no details were made public, nor were allowed to be referred to in the Press. As in the war of 1914, a number of merchant ships, chiefly presumably large liners of good sea-keeping capacity and large endurance, were taken up and armed for duty as Armed Merchant Cruisers—one of them which later came into prominence was the P. & O. Rawalpindi, and there were doubtless others of the same



THE KING INSPECTS THE RESERVE FLEET.

The ship's company of H.M.S. Cardiff marching past His Majesty on the quarterdeck.
Admiral Darlan, Amiral de la Flotte, Commandant-en-Chef, Forces Maritimes Françaises, is seen behind the King.
(*"The Times"* photograph.)



description. Trawlers were taken up for minesweeping, and a number of small yachts and motor craft for anti-submarine and patrol duties of various sorts. All these measures took time, and only came into operation gradually ; and as in all former wars, the requirements for these auxiliary craft grew with the progress of the war, together with the need for officers and men to man them. The existing Reserves were fully adequate to cover, and more than cover, all the requirements that existed at the outbreak of war and for some considerable time after, so that many of those who volunteered enthusiastically for naval service could not at the time be absorbed, much to their disappointment. That state of affairs eased after some months of war, and it became necessary to create an establishment for the training of temporary officers for whom the demand was constantly increasing. This development will be described later.

The opening episode of the war at sea was truly typical of the Germans. War was declared at 11 a.m. on September 3. At 7.45 p.m. the same evening, the outward-bound passenger ship *Athenia*, which had left Liverpool with 1,100 passengers for Canada the day before, when 250 miles west of the north-western coast of Ireland, was torpedoed without warning by a U-boat, which immediately surfaced and fired a shot at the liner, apparently with the object of disabling her wireless. The majority of the passengers and crew were able to take to the boats, though a number of them were killed by the explosion of the torpedo. The boats were quickly picked up by British destroyers, sent to the spot when the outrage was reported, and by neutral merchant ships which were in the vicinity ; but there were over a hundred lives lost.

The sinking of the *Athenia* was undoubtedly intentional, though it seems possible that the U-boat commander may have jumped to the conclusion that she was an Armed Merchant Cruiser. But if so, he must have been not only incompetent, but highly irresponsible, not to have fully satisfied himself of the character of the ship he was attacking before firing his torpedo. The Germans themselves admitted that it was an outrage, by implication at least, since they disclaimed all responsibility for it and alleged that it must have been the work of Mr. Churchill ; though in reality it was no worse than many other outrages admittedly committed by Germans at sea as the war progressed. But whatever the truth on this point, it proved that the German Navy's war plan was to carry out intensive attack directly on merchant ships, with U-boats ; for not only the one which sank the *Athenia*—which may have been on passage—but numbers of others were found to have been already stationed, before the actual opening of hostilities, in positions where they would be best placed to prey on British sea-borne communications, as far afield as the coast of Portugal.

On September 3, Mr. Churchill was appointed First Lord of the Admiralty, and the Government announced that the convoy system would be adopted for the protection of British merchant shipping. They also announced the institution of a system of Contraband Control—the Contraband List itself, which closely

resembled that in force in 1918 at the end of the last war, was published the next day—and a number of other war measures. Control of the British merchant shipping had been assumed by the Admiralty a few days earlier, when Hitler's attack on Poland showed that war must be imminent, so that the inauguration of convoy was merely a matter of administration. It was announced jointly by Britain and France that passage through the Straits of Dover would be dangerous on account of minefields, and that all shipping must pass through The Downs—a measure which greatly facilitated the control of contraband carried in neutral ships. A Ministry of Economic Warfare, under Mr. Ronald Cross as Minister, was set up two days later to deal with the administration and co-ordination of economic measures against the enemy, enforced by the Navy's control of all communications at sea.

The convoy system, unlike the German attack on British shipping, which could be, and was, put into full operation at a moment's notice, took time to bring into force. The first outward-bound convoy left England four days after the outbreak of war; but there were numbers of merchant ships already at sea then, both inward-bound and outward, and they had to run the gauntlet of enemy attacks until they were through the danger area. It took rather longer, too, to organise inward-bound convoys, since the organisation at assembly ports abroad could not be set up until the necessary staffs could be despatched and get to work. Nevertheless that process took no more than a fortnight, at the end of which time the system was in full force both ways.

It immediately proved its efficacy. In the first week of war the U-boats succeeded in sinking 65,000 tons of British shipping, a figure which was half what they had accomplished at the peak of the submarine war in 1917, when there were some hundred of them working at sea. In the second week the figure of their depredations fell to 46,800 tons; in the third, when the convoy system was in full operation although there were still a number of ships coming in singly, it fell to 21,000; in the fourth and fifth to 9,000 and 867. This aspect of the war at sea is described in greater detail in Chapter VI.

Despite the *Athenia* case, it is but fair to acknowledge that a number of the U-boat commanders seem, in the early days of the war, to have made every endeavour to act in accordance with the "Submarine Protocol" to which Germany had freely and voluntarily subscribed in November 1936. The S.S. *Olive Grove*, for instance, was stopped by a U-boat on September 7, 200 miles to the north-west of the coast of Spain. The weather was fine and the German commander ordered the ship's company into their boats before sinking their ship, giving them time to do so safely, and after proper preparation of the boats; he then led the boats for some hours, saying he would put them on the course for the Fastnet, and only left them when he had seen them picked up safely by the American liner *Washington*. The Master of the *Olive Grove* described the U-boat commander as not more than 20 years of age. A few days later the S.S. *Firby* was sunk in the Atlantic, somewhere to the west

of Ireland. The U-boat fired on the ship to enforce the order to stop, and four men were injured. But after the Firby's crew had taken to the boats, the U-boat commander gave them provisions and bandages for the wounded men, and sent a wireless signal addressed to Mr. Churchill giving their position before leaving them. They were rescued thirteen hours later by a destroyer sent in response to the signal.

Such behaviour, however, was exceptional. On the same day that the Olive Grove was sunk the S.S. Manaar was torpedoed without warning off the coast of Portugal, and the ship was afterwards fired on by the U-boat while her company were getting into their boats, and two of her crew killed. The remainder were left to their fate, and though some of them were picked up by Dutch and Portuguese ships which happened to come across them, one boat, containing seventeen men, was not found. The S.S. Vancouver City was also torpedoed without warning, three men being killed by the explosion; the remainder got away in their boats and, fortunately for them, were picked up; but for all their attackers knew or cared they might never have been seen. The S.S. Hazelside was fired on without warning by a U-boat, within sight of the English coast; five officers and six men were killed by shell-fire which also wrecked most of her boats.

Nor were British merchant ships the only victims of Nazi savagery. On September 23 a U-boat stopped in the Skagerrak two Finnish ships, the Martti Ragnar and the Walma, bound to England with cellulose. To take them into a German port for adjudication by a prize court would have been both practicable and legitimate, but that was not enough for a Nazi. They were both sunk out of hand and their crews left to save themselves in their boats as best they might. On September 30 the Danish ship Vendia, which was bound to a Belgian port in ballast, was fired on without warning by a U-boat which approached from abaft her beam, and continued to fire at short range, despite being hailed in German, until eleven of her company had been killed. She was then sunk by a torpedo. The U-boat commander did indeed put himself to the trouble of picking up the Danish master out of the water, to greet him angrily with the accusation, "You were carrying contraband"—as if, forsooth, that were any justification for brutal outrage and murder of neutral non-combatants. This ruffianly commander the same day torpedoed the Swedish steamer Gun, bound to Belgium with a cargo of wood-pulp, after subjecting her officers and crew to bullying and threats in the endeavour to make them declare that they were bound for England.

It was evident that the U-boat commanders quickly found their opportunities for interrupting sea-borne commerce to be severely restricted if they were to behave in a manner becoming civilised men. Such restrictions are not to the German taste, as was shown by their inhuman behaviour in the invasion of Poland, when open cities, and even fleeing refugees of all ages and both sexes, were mercilessly attacked with bomb and machine gun. Restrictions were quickly thrown to the winds. Probably those commanders

who realised the tradition of the sea and the duty of a seaman, and in consequence returned with but a small tale of British merchant ships sunk to their credit, were rated for being so squeamish as to suppose that they ought to act in accordance with Germany's freely plighted word, if it entailed forgoing a military advantage. However, that may be, any pretence of acting in accordance with the Submarine Protocol was quickly abandoned, and it became quite clear that, once again, immunity of non-combatant seamen from murder by the Germans, whenever they thought that some military advantage was to be gained by that crime, could be secured only by the active protection of British sea power. That was at once forthcoming.

The attack on German sea forces was inaugurated with vigour from the first. In the interval before convoys could be organised, the location of submarines was difficult, but a number were found by cruising forces and attacked forthwith. Depth charges, the deadly weapon against which—in actual fact, and not the mere bombast in which the term was later used by Hitler—the diving U-boat has really no defence, were available in plenty. In the “deadly Asdic”—Mr. Churchill's term—British anti-submarine craft have a means of locating a U-boat when submerged, and of keeping touch with it to the point of delivering the *coup-de-grace*; though of course the Asdic, like all human devices, is not infallible, and some U-boats have eluded attack despite it. The Navy was thus even better armed against the U-boat than in 1917–18, when it had gained the mastery; and as soon as the convoy system was in full operation U-boat attack became hardly a serious danger to merchant ships.

In the interim, however, there were other actions. There were no German forces at sea and thus open to naval attack, but the Air Force here stepped into the breach. On September 4 a daylight bombing attack was made on ships lying in the Schillig Roads, off Wilhelmshaven, and Brunsbüttel, at the North Sea entrance to the Kiel Canal, in which it was believed that hits had been made on the battle cruiser Gneisenau and another ship. The attack was a most gallant performance, as the planes had to come down to a low altitude in order to press their attack home in the weather conditions obtaining, and they met heavy opposition from both fighters and A.A. fire. This incident is dealt with in greater detail in Chapter VII.

The first serious casualty to the Navy occurred within three weeks of the outbreak of war, in the sinking of H.M.S. *Courageous*, aircraft carrier, by torpedoes from a submarine on September 18. Before the war, the *Courageous* had been in the Reserve Fleet since she had been relieved as flagship of the admiral commanding aircraft carriers by the *Ark Royal*. She was commissioned with the remainder of the Reserve Fleet in August by Captain Makeig-Jones, who had just relinquished command of the *Nelson*, fleet flagship of the Home Fleet, and was about to take up the command of the Naval Barracks at Portsmouth as Commodore. During the period before convoys were fully organised, the aircraft of the Fleet Air Arm were employed in scouting for submarines in the focal areas of sea trade, in order to

give protection against them to the many merchant ships which were still moving independently. The *Courageous*, screened by four destroyers, was engaged on this duty in the Western Approaches to the British Isles.

On September 18, towards evening, two of her destroyers had been detached to hunt a U-boat located in the vicinity. Later, when she turned head to wind and steered a steady course in order to recover her aircraft which were in the air, it so happened that a U-boat found itself within range of her, unobserved either by her aircraft or by her attendant destroyers. She was hit by two torpedoes and sank some twenty minutes later with the loss of her captain and over 500 of her company of some 1,200. It was an exceedingly skilful attack, though the U-boat undoubtedly was fortunate to find herself in a position where an attack was possible just at the moment when, owing to the operation of landing on aircraft, the carrier's course became steady and definitely known. The U-boat was immediately counter-attacked by the destroyers, but the result of their action was not known. The German wireless claimed that the boat was unharmed and returned to harbour, and what purported to be the U-boat commander's account of his exploit was published. But as the loss of the ship had been immediately published in England, and the alleged German account might have been composed by anybody with an elementary knowledge of submarine work, its publication proved nothing either way. By some it was considered disturbing that the ship should have succumbed so quickly to underwater attack; but the *Courageous* was well known to have been of very light construction, when first built twenty years ago before underwater protection was adopted; while the explosive charge of torpedoes have probably increased in the same interval. In any case, the loss was later shown to provide no cause for uneasiness regarding the resisting power of more modern and less flimsily built ships, both the *Barham*, an older ship, and the *Nelson*, a newer one, survived hits by torpedo and mine respectively.

The Admiralty policy with regard to the publication of war damage was defined as being to announce at once any losses of H.M. ships, but in the case of damage, not necessarily to make any announcement at all, although casualties to personnel would always be announced in due course. The object of this policy is obvious, and provides a complete justification for it. It is rarely possible for a U-boat commander to observe the result of his torpedoes, since the discharge of them reveals his presence and position, and he has to bend all his efforts to evading the inevitable counter-attack. It is therefore a favourite German stratagem, whenever a U-boat has fired torpedoes at a man-of-war, to broadcast a claim to have sunk her, in the hope of provoking from the Admiralty a statement of what the real result of the shot was. There is every reason against gratifying the enemy's curiosity in this direction.

One of the prophecies made freely before the war was that from the first there would be frequent air attacks on men-of-war, particularly in the North Sea where they are most easily reached from

German aerodromes. This prophecy proved false, and it was some weeks before any air attack was made at sea at all. The first attack occurred, it seemed, almost by accident. On September 26 the British submarine *Spearfish* had been severely damaged by depth charge attack while on patrol in German waters. She had succeeded, however, in eluding her assailants and was making her way slowly homeward on the surface, unable to dive. She asked for escort, and destroyers were sent to meet her; as her presence and position were probably known to the enemy, it was considered desirable for the Home Fleet to be at hand, in order to deal with any attempt by German surface forces to overwhelm her, or her destroyer escort while hampered by the presence of a semi-disabled consort. She had sighted aircraft on September 26 but they had not apparently seen her, for she was not molested. Nor was she on the following day, when her escort joined, but the aircraft looking for her apparently fell in with the Home Fleet instead, and attacked them.

Their attack was so far from being effective that the Commander-in-Chief did not consider it of sufficient importance even to report to the Admiralty, until after he reached harbour the following day. No British ship was hit, and there were no British casualties. On the other side, however, two German aircraft were brought down, though it was not stated whether by A.A. fire or by the fighters of the Fleet Air Arm. The Germans, whose forces that survived—some twenty aircraft took part in the attack—reached home the same afternoon, got in their version of the affair first. The German wireless announced confidently to the world that the *Ark Royal* had been sunk and that a battleship had been hit by a bomb and severely damaged. For weeks afterwards the German broadcaster daily boomed into the air the question, "Where is the *Ark Royal*?", and continued to do so even after the United States Naval Attache had visited the Home Fleet and mentioned in his official report, which was made public, that he had attended Divine Service on-board the *Ark Royal* on a Sunday forenoon and had noted that she was quite undamaged.

The German conviction that she had been sunk was probably based on a photograph taken by one of the bombers. What actually happened was that a heavy bomb—perhaps some 500-lb—dropped quite near the *Ark Royal* in one of the attacks, just at the moment when she was turning under helm and consequently heeling over. The explosion of the bomb accentuated the heel and she made a very heavy roll, going over almost on to her beam ends—"until the edge of the flying deck was almost awash" according to a description afterwards given to the Overseas Press Club in New York by Sir Derwent Hall Caine. If the airman took a photograph at that moment, it would show the ship lying on her beam ends and the enormous splash of the bomb close alongside her; anyone looking at it might well be excused for thinking that it showed the destruction of the ship. Actually, she righted herself at once, none the worse for her heavy roll; and it seems probable that she then left the vicinity of the fleet to fly aircraft on or off, for when the airman next sighted

the squadron, he did not see her and was thus confirmed in his belief that she was sunk.

His account, presumably supported by his photographs, was unhesitatingly accepted in Germany—ever prone to “wishful beliefs.” Lance-Corporal Francke, the pilot in question, was awarded the Iron Cross of both the first and second class, and received a personal letter from Field Marshal Göring informing him of his promotion to lieutenant. That promotion, as far as is known outside Germany, was not cancelled when the *Ark Royal*, three months later, demonstrated to the world the fact that she still floated by arriving at Rio de Janeiro.

Two days later a British air attack on German warships in the Heligoland Bight was no more successful. It was exceedingly briefly reported on either side. The Air Ministry stated that the attacks were pressed home at a low altitude despite formidable anti-aircraft fire, and admitted the loss of some machines. The German official report gave the number of attackers as six, stated that no damage was done to the ships attacked, and that five of the planes had been shot down by fighters.

At the end of the month evidence became available that an enemy surface warship was at large in the Atlantic for the purpose of attacking British trade. The British *S.S. Clement* was stopped off the coast of Brazil and sunk after her crew had been ordered into their boats, the master and chief engineer being taken onboard the warship. The ship's boats were picked up by Brazilian ships and their occupants landed at Maceio and Bahia; but no very clear information was made public regarding the identity of the assailant. It was generally understood, however, to have been one of the three “pocket battleships,” and report named the *Admiral Scheer* as the ship—erroneously, as it afterwards turned out.

OCTOBER.

Air activity over the North Sea increased from this time on. On October 7 two British minesweepers were attacked by German flying boats, but there were no casualties on either side. The next day, a German naval squadron was reported at sea “south-westward of Norway,” a position which would seem to indicate the centre of the North Sea, some ten to twelve hours steaming from German bases. British forces did their best to engage it, but did not succeed in gaining contact before nightfall and the enemy escaped. The next day, Monday, October 9, a British force consisting of cruisers and destroyers was searching further to the north—where the Germans might have been if they had not turned back to port when they were located—despite very stormy weather, when they were attacked by German bombers. One destroyer which was attacked had to turn stern on to the sea in order to fight her guns when she was attacked by more than one plane. Heavy bombs were dropped in both level attacks from 5,000 feet and in diving attacks, but the nearest that any bomb fell was 400 yards away. Later a cruiser squadron was attacked repeatedly for about five hours,

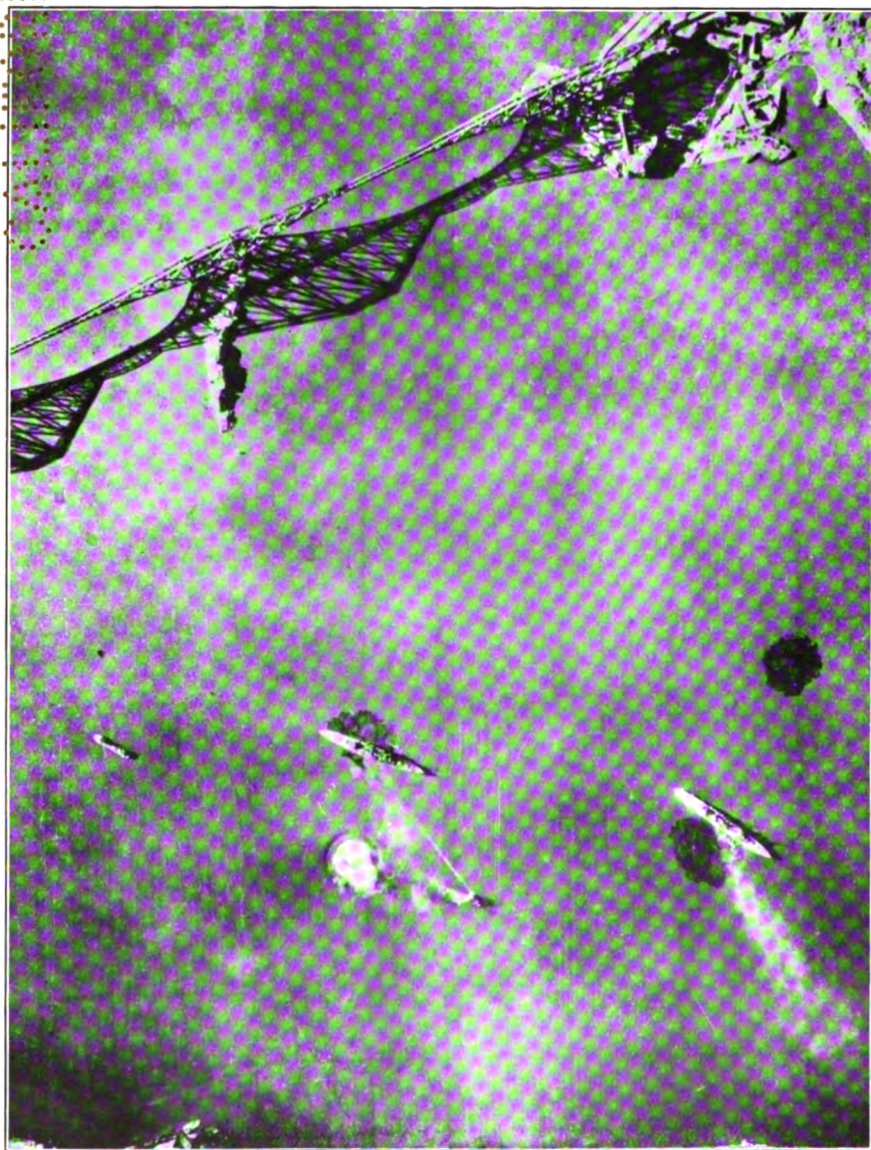
over 100 bombs being dropped ; no ship was hit and though one bomb fell close enough to throw splinters onboard a cruiser, some of them missed by as much as a mile. The A.A. fire from the ships, on the other hand, seems to have been very effective. Four German aircraft had to land in neutral territory, and there is reason to believe that two more were lost at sea. The result of this encounter was a definite failure of the bomber and a qualified success for the anti-aircraft gun.

On Friday, October 13, the Admiralty were able to announce that three U-boats had been destroyed in one day, some survivors being picked up from one or more of them. It is not the usual Admiralty policy to announce the destruction of U-boats until some time has elapsed—long enough for it to be already quite clear to the enemy that they must have been lost—for reasons which will be obvious. It is to be presumed, however, that this achievement was considered so encouraging that the disadvantage of the enemy coming to know of it at once seemed to be outweighed by the heartening effect at home.

Any jubilation there may have been over this success was, however, quickly supplied with a corrective. In the small hours of Saturday, October 14, the *Royal Oak*, lying at anchor in Scapa Flow, was torpedoed by a U-boat which had penetrated the defences of the anchorage—supposed, somewhat lightly as it turned out, to be proof against entry. According to a statement made to Parliament by Mr. Churchill after strict enquiry into the whole circumstances, it appeared that the U-boat succeeded in entering "on the surface or half-submerged at high water." She fired a salvo of torpedoes at the ship, one of which hit forward, doing little damage ; but so confident was everybody of the sanctity of the anchorage that it never occurred to anyone that a U-boat could be responsible for the explosion and it was concluded that it must have been internal. The U-boat was thus unmolested, and was able to reload her torpedo tubes and fire another salvo twenty minutes later, of which three or four hit the ship in quick succession. No "bulges" give immunity from an attack of this intensity, and the ship capsized and sank shortly afterwards. Even then, as the *Royal Oak* was lying at some distance from other ships which were in the port, it was not realised what had happened, and the assailant was thus able to leave the anchorage, presumably by the route she had used in entering. Only 414 of the *Royal Oak's* company of some 1,200 were saved ; Rear-Admiral Blagrove and over 800 lost their lives.

As usual, a completely fictitious account of the occurrence was broadcast by the Germans. The U-boat captain, whose name was given as Commander Prien, was brought to the microphone and broadcast an account of his attack which was incompatible both with a former account that he had given in a press interview and with what actually happened in the Flow. Not content with claiming the credit for what really was a very daring and remarkable achievement, he also maintained that he had torpedoed and sunk the *Repulse*—a claim in which there was not a word of truth. The results of his exploit—if Commander Prien really exists—was

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GERMAN AIR RAID ON THE FIRTH OF FORTH, OCTOBER 16, 1939.

Bombs falling near the Southampton and Edinburgh.

Photograph taken by one of the German airmen and published in Germany.

(Associated Press photograph.)

sufficiently serious to the Home Fleet. Speaking on the Navy Estimates on February 27, 1940, Mr. Churchill said that it had not had the use of Scapa Flow, strategically the best-placed anchorage, ever since, and had consequently been obliged to do far more steaming than had ever been contemplated.

On October 16 some fourteen German bombing planes made an attack on ships of the Home Fleet lying in the Firth of Forth close to the Forth Bridge.* The success obtained was inconsiderable, for the only material damage done was to sink the Admiral's barge and a pinnacle lying with it at the lower boom by a bomb which actually hit the bridge of H.M.S. Southampton, but glanced off and burst in the boat alongside. There were, however, a number of casualties caused by splinters from bombs which burst in the water close to ships—three in the Southampton, seven in the Edinburgh, and twenty-five in the destroyer Mohawk, which was returning to harbour at the time and had a large number of men on deck getting ready to secure their ship. The Mohawk's first lieutenant, who was on the forecastle, was killed; her captain, on the bridge, was severely wounded but remained at his station until he had secured his ship. He then collapsed, and died soon after reaching hospital. The attackers were engaged both with A.A. fire and by fighters of the R.A.F., who destroyed seven of them, taking a number of prisoners.

On October 17, two bombing attacks were made on Scapa Flow, in the first of which some damage was done to the Iron Duke, stationed there as a depot ship. There were no British casualties in either attack, but two of the raiders were brought down. Two reconnaissance aircraft were also brought down the same day off the east coast further south. Reconnaissances over the Orkneys and Shetlands thereafter were frequent.

On October 21, the first of the long-expected air attacks on a convoy took place off the east coast, by some twenty-one bombers. From the attackers' point of view, it was a complete failure. They evidently found the A.A. fire of the convoy escort much heavier than they had expected, for they were unable to reach an attacking position. They were also engaged by fighters of the R.A.F., and the result was that five of them were shot down. Some of their crews were picked up at sea; others succeeded in landing, in an exhausted condition, in the collapsible rubber boats carried by German aircraft which operate at sea. It would be rash, perhaps, to draw too definite conclusions from one attack carried out by only a small number of planes; but the result of this action lends little support to the theory, often advanced before the war, that the convoy system, while efficacious against submarine attack, would be actually of assistance to attackers from the air.

Evidence that there were German warships at large in the Atlantic, preying on sea-borne trade, continued to accumulate during the month. On October 20 the American merchant ship, City of Flint, which was overdue on a voyage from Boston to Manchester, put into the Norwegian port of Tromsø. She was found to

* See opposite.

be in charge of a German prize crew, put onboard her from the "pocket battleship" *Deutschland* with orders to carry her to a German port; and she had onboard as prisoners of war the ships company of the British ship *Stonegate*, who were promptly released by the Norwegian authorities. From them it was learnt that their ship had been sunk by the *Deutschland* on October 5 in the latitude of Florida; that the *Deutschland* had captured the *City of Flint* on October 9 off the Newfoundland Banks, where, on October 14, she sank the Norwegian ship *Hansen*. The next day the *City of Flint* parted company; no more was heard of the *Deutschland* during the month, and it was even doubtful whether it was she or another which had sunk the *Clement* off the coast of Brazil.

The case of the *City of Flint*, since it raised in an acute form several knotty points of disagreement between belligerents and neutrals upon the respective rights and duties of each, calls for detailed relation. The international law on the subject of the entry of prizes into neutral ports is not a matter of general agreement. The view most generally held—upon which the United States acted in the case of the *S.S. Appam* in the last war—is that prizes may only be taken into neutral ports on account of distress of any sort, and that they must leave again as soon as the cause which justified their entry no longer obtains. If they enter neutral ports in any other circumstances, or if they fail to leave when there is no good cause for their remaining, the neutral Power should remove and intern the prize crew and restore the ship to her proper owners. On the other hand, one of the Hague Conventions of 1907 purports to authorise the use of neutral ports by prizes in a much more elastic manner; but this convention was not accepted by most of the maritime Powers.

When the *City of Flint* was sent off by the *Deutschland* on October 15 to go to a German port, it must have been obvious to the officer of the prize crew that his only chance of carrying out his orders was to go far to the northward to evade the British patrols, and reach Germany by keeping inside Norwegian territorial waters, where he would be immune from interference by the British Navy. But this entailed a much longer voyage than that for which the ship was stored, and she ran short of water. Thus, it was for that she had to put into Tromsø, which is inside the Arctic Circle, on October 20.

The Norwegian authorities recognised that her entry was permissible provided that she left again as soon as her distress—i.e., lack of water—was relieved; but the British prisoners she had onboard were released. The published accounts of the circumstances of their release are conflicting, and it is not clear whether they were voluntarily set free or whether their release was compelled by the Norwegian authorities; and, if the latter, what were the precise grounds on which that action was taken. But, of course, the presence of the ship and the whole circumstances became public property at once. It was probably that consideration which influenced the prize officer, instead of steering forthwith for Germany—whereby he would run a grave risk of interception by British forces which then knew of his proceedings—to go in the opposite direction. On October 22 the *City of Flint* arrived at the Russian port of Murmansk.

It was at first reported that the Russian authorities had acted in accordance with the American precedent so far as to remove and intern the German prize crew. That report, however, was not confirmed, and the American Ambassador in Moscow could obtain no information on the subject when he requested it, nor could he get into communication with the ship. Actually, she left again on October 28, still under the control of the German prize crew, her use of the port having been excused on the ground that she had been in need of engine repair. It seems very doubtful if the alleged engine defects had any real existence. On October 31 she again called at Tromsø, but did not anchor; she continued her voyage southward, keeping sedulously within Norwegian territorial waters. Two days later, British light naval forces sighted her therein, in a position whence she could have reached Germany without emerging, and they kept a watch on her, though keeping outside themselves. The next day, without any valid excuse for doing so, she anchored in the port of Haugesund. The Norwegian authorities thereupon removed and interned the prize crew and released the ship to her American officers and company.

Germany, of course, immediately protested to Norway against this action, but naturally without result. According to a statement by the Norwegian Foreign Office, the German prize officer stated that he went into Haugesund in accordance with orders from Germany. The irresistible inference is that Germany desired to acquire a cause of complaint against Norway rather than, by going through with the seizure of the ship, giving the United States cause for grievance against her. That her complaint had no basis in international law or justice would not, of course, weigh with her for a moment.

On October 26 the shattered wreck of a U-boat was discovered stranded on the Goodwin Sands. It was at first reported that a large number of bodies had been removed from the wreck and landed; but the report was afterwards contradicted and the statement made that no bodies had been found. It was not found possible to salvage the boat, and eventually, like most vessels wrecked on that most treacherous of shoals, her hull disappeared in the sands.

On October 14 the Polish submarine Orzel arrived in British waters to join her sister ship Wilk and operate with the British Navy. She had been at Gdynia when the Germans attacked Poland, and the proximity of the German bombing bases decided the captain to leave harbour on September 1. He was then a sick man, but for four days he cruised submerged in the Gulf of Danzig watching through his periscope the aerial attacks sweeping over the Polish coast towns in wave upon wave. He was sighted in shallow water and bombed by aircraft, so he decided to seek the wider waters of the Baltic.

For a week he searched for a sister submarine which had signalled for help. By this time he was so ill that he had to be hauled up the conning tower on a rope's end, and on the thirteenth day he was so ill that his second in command decided to land him in a neutral country, and chose Estonia. They put into Tallinn on September 15.

The captain was landed, and Lieutenant-Commander John

Grudzinski took command. A German merchant ship in the harbour was to leave shortly, so the Estonian authorities refused permission for the Orzel to proceed for another twenty-four hours. At the end of this time officials arrived on board with the astonishing announcement that as the Orzel had exceeded the time in a neutral port allowed to belligerents by international law the submarine was under arrest. The breech blocks of the guns, all charts and small arms were removed, preparations made to hoist out the torpedoes, and a guard mounted.

By the time fifteen torpedoes had been hoisted out the second in command had contrived, unseen by the guard, to file through the wire of the hoisting apparatus. It broke, leaving five torpedoes on board.

In the meanwhile the captain was busy with a hack-saw cutting the wires, until only a single strand held them to the jetty.

The Estonians had an overhead searchlight shining down on the submarine and jetty, and there was a telephone within reach of the guard. At 2 a.m. the guards were overpowered and bundled into the submarine. An officer ran ashore and cut the wires of the searchlight and telephone, but before they managed to gag the guard on the jetty he had shouted for help. Destroyers switched on searchlights and opened fire with rifles, but the Orzel made for the entrance, blinded by searchlights, with bullets spattering all round. Just short of the entrance they grounded on some rocks, but in spite of the fusillade they blew the tanks, refloated, and got clear of the harbour.

All night they fled submerged, steering blindly with no chart to give them soundings, and at dawn they lay on the bottom. During the day they heard the hunters passing to and fro over them and depth charges bursting around them. About 9 p.m. there was a lull, and at midnight they rose cautiously. There was nothing in sight.

The captain decided to cruise in the Baltic in search of German ships as long as his five torpedoes lasted and then make for England. They learned from the German wireless that they were being denounced to the world as murderers of their guards, so one fine night they launched their berth on boat, put the two Estonians into it with money, cigarettes, and a bottle of whisky, and watched them row to the shore a mile and a half away. Then these men who had lost their country and their families made a wireless signal to announce that the Estonians were safe so that their relations might have no further anxiety.

For a fortnight they cruised in the Baltic. Every night they were hunted to prevent them from charging batteries; by day they cruised submerged, never knowing when they would strike a rock, or they laid on the bottom. By this time their water was running low and the cook had a scratch that was causing blood poisoning. On the thirty-eighth day they decided to try to reach England.

In spite of lack of charts, constant attacks by German destroyers, and further damage by grounding, in two days more they threaded the intricate channels of the exits from the Baltic and gained the North Sea. But once there every man's hand was against them:

they were fair game for German and British alike, menaced from the air, by surface patrols, and by submarines. But the first lieutenant, Piasecki, could speak English.

On October 14 a faint message reached a British wireless station : " Supposed position from 0630 on appointed place for Polish Navy. Beg permission entrance and pilot. But have no chart.—Orzel."

A few hours later a British destroyer found them and led them triumphantly into harbour. They learned then that their sister submarine was also safe. They had only three requests : to land the sick cook, to replenish their water supplies, and to be given breech blocks for their guns. They were then prepared to go to sea forthwith on whatever patrol it pleased the British Navy to employ them. They were received with hearty cheers when they joined the British Fleet.

NOVEMBER.

Warfare both by and against the U-boats continued during the month in the fashion which had become familiar. As the protection given by the Navy to British ships improved, however, the enemy turned his attention more and more to neutrals, adopting the description " economic warfare " to describe his murderous attacks on neutral non-combatants. On November 22 the German official broadcast concluded with the words : " Economic warfare was continued with great success by the German Navy. A number of steamers were sunk in the North Sea." The manner of their sinking was but too often like that of the Norwegian tanker Arne Kjode, torpedoed without warning in the North Sea on November 12. Twenty-three survivors were picked up and landed by a British trawler after forty hours in an open and leaky boat ; the other boat in which there were seventeen men was not seen again. Even less defensible, if possible, was the destruction of the Dutch tanker Slidrecht, which was stopped in the Atlantic by a U-boat on November 13. Although she was bound for a neutral port, her people were ordered by the U-boat commander to abandon ship within half an hour, and she was torpedoed as soon as they were clear. The boat which had communicated with the submarine, which had not had time to get back to the ship before she was sunk, had very little food in it and the five occupants had no coats ; but it was seven and a half days before they came in sight of land and were rescued by a trawler. The other boat, in which were the remaining twenty-six members of the Slidrecht's company, was never seen again. Such was the German conception of " economic warfare."

British attacks on the U-boats continued to take substantial toll of them. Speaking in the House of Commons on November 9 Mr. Churchill reported that he estimated that the rate of destruction was from two to four per week, according to the number at work at sea.

In the middle of the month a change in Nazi tactics became apparent. Discouraged, no doubt, by their losses when attacking British merchant vessels, they not only intensified their attacks on

neutrals, but also took increasingly to mine-laying, an operation in which it was much easier to avoid contact with British forces. In the three days, November 18, 19, and 20 no less than eight ships, five of which were neutrals, were sunk by mines, chiefly in the approaches of ports in the south-east of the country. During the month some two hundred German mines, broken adrift from their moorings in the heavy gales which prevailed throughout the month, were washed ashore on the Yorkshire coast. None of the mines had been laid either in territorial waters or in the areas of open sea notified by Germany as mined. In the laying of them, all obligations imposed by international law, and the rights and safety of neutral shipping, were completely disregarded. One of the first victims was the Dutch liner *Simon Bolivar*, bound from Holland to the Dutch Indies with many passengers, including women and children onboard. The loss of life was heavy.

The German wireless at first affected to believe that British mines were the cause of these losses, but that allegation was too fantastic even for a German propagandist to maintain. Besides, they wanted to gloat over the destruction wrought, and quickly abandoned the pretence of innocence and gloried in the success of their mines.

Merchant ships were not the only victims of the mines. On November 14 H.M.S. *Blanche*, destroyer, struck a mine off the east coast and was lost with twenty-one casualties. On November 21 H.M.S. *Gipsy* met the same fate, but was beached before she actually sank. Forty ratings were reported missing, and twenty-one officers and ratings injured.

It became known to the public at about this time that the Germans were using, besides the ordinary type of moored contact mine, a "magnetic mine," so constructed as to explode on the near approach of any iron or steel ship. Such a device obviously introduced new problems for the defence. Since it did not depend on contact for its effect it could be laid on the bottom wherever the water was sufficiently shallow for ships passing over it to be within the danger area of its explosion; and a mine on the bottom could not be removed by the ordinary sweeping, since the sweep wire would pass harmlessly over it. There would even be no indication to the sweepers that the mine was there, unless one of them should herself touch it off by passing near enough; and the result would be that sweepers might report clear of mines a channel in which actually there were magnetic mines thickly sown. At the same time, the utility of these mines was strictly limited, since they could only be really effective in shallow water.

The last disability, no doubt, determined the enemy to use aircraft for laying magnetic mines. They could not be laid thickly by this agency, of course, but on the other hand, they could be placed in narrow inshore shallow channels which submarines, which had laid most of the other minefields, could not reach. In the last week in November, German aircraft were observed to be dropping some objects into estuaries on the east coast used by shipping, and it was at once realised what was being done. The planes chose moonlight nights, in order, obviously, that they could determine

their position accurately and at the same time utilise darkness to make their get-away, and timed their arrival for dusk. Parachutes were used on the mines in order to mitigate the shock of striking the water. This was the "new weapon against which there is no defence" vaunted by Hitler in his speech at Danzig on September 19.

It did not take long for the Navy's experts to prove Hitler's boast to be idle. On November 22 one of the mines, obviously intended for the channel into the port of London, was observed to fall on the sands at Shoeburyness, which dry at half tide. Within a few hours a party from the Vernon under Lieutenant-Commander Ouvry arrived to deal with it and lay its secrets bare. Carefully divesting themselves of everything in any way magnetic, they first of all secured it so that it could not move, and then made templates of the tools they would require for opening it up, which were constructed of non-magnetic material, at the Army workshops near-by, during the next high tide while the mine was covered. Mr. Ouvry then went to the mine by himself, keeping the rest of the party at a safe distance, and proceeded to take it to pieces, step by step. Between each, he returned to the rest of his party, described exactly what he had done, and exactly what he was going to do next, in order that, if the result of any of his actions should be to explode the mine, the next investigator would know one step, at least, to avoid.

In due course he found and removed what was obviously a detonator, and judging that the mine was then reasonably safe, the rest of the party gathered round and the dismantling proceeded more briskly. Their confidence was somewhat shaken when a second detonator was later discovered and removed in its turn, but all went well, and within thirty-six hours of its being dropped the mine was fully dismantled and taken to the Vernon for detailed study. It was found that one of the detonators was connected to an impact firing arrangement, so that the mine, if it dropped on a hard surface, such as the deck of a ship, instead of the water, would act as a bomb. The other was connected to a delicate magnetic relay, which would respond to the near approach of any large magnetic body such as the steel hull of a ship. Lieutenant-Commander Ouvry and his companions were later decorated for their services. Within two months, as will be described later, the experts of the Vernon had devised means to defend shipping against Hitler's invincible weapon.

In the meanwhile, however, it had a certain success. On November 21 H.M.S. Belfast was damaged by a mine, probably magnetic, near May Island, in the entrance to the Firth of Forth. Twenty-one of her company were injured, but she returned to harbour under her own power and was forthwith repaired.

No further news came in during the first part of the month of enemy raiders in the Atlantic, though the fact that a few ships from the Cape were overdue pointed to the possibility of there being one south of the equator. But on November 16 the small British steamer Africa Shell was sunk by an enemy warship on the east coast of South Africa, in Portuguese territorial waters, 180 miles north of

Lourenço Marques. Again no very clear description of her assailant was obtainable, and it was still uncertain whether it was one of the pocket battleships—there would have been time for either of them to reach the spot since she was last heard of—or an armed merchant raider such as the *Moewe* and *Wolf* which had such success in the last war.

It soon became certain, however, that the *Deutschland* was still operating in the North Atlantic, for on November 23 she encountered and sank the British armed merchant cruiser *Rawalpindi*, Captain E. C. Kennedy, a P. & O. steamer which had been taken over, armed with eight 6-in. guns, and was employed on the Northern Patrol, by which the contraband control of German trade is enforced. "This duty," in the words of the Admiralty announcement, "is particularly arduous on account of the long, dark nights and severe cold, and required for its performance large vessels of good sea-keeping qualities, capable of enduring the frequent storms." The official narrative continued :

"At 3.30 p.m. on the afternoon of Thursday, November 23, when cruising to the south-east of Iceland, she sighted an enemy ship. Captain Kennedy, having observed this vessel through his glasses, said, 'It's the *Deutschland* all right,' and the crew were immediately ordered to action stations. Course was altered to bring the enemy on the starboard quarter. Smokefloats were lit and cast into the water to enable the *Rawalpindi* to escape. However, a second enemy was soon seen to starboard.

"The *Deutschland*, approaching, signalled to the *Rawalpindi* to stop, and when she continued her course, fired a shot across her bows. As this warning was rejected, the first salvo was fired by the 11-in. guns of the *Deutschland* at a range of 10,000 yards. The *Rawalpindi* replied with all her four starboard 6-in. guns.

"The third salvo from the *Deutschland* put out all the lights and broke the electric winches of the ammunition supply. The fourth salvo shot away the whole of the bridge and wireless room.

"Both the German ships were now closing rapidly, and by this time the second had gone round the *Rawalpindi*'s stern and was firing from the port side. The *Rawalpindi* maintained the fight until every gun was put out of action and the whole ship ablaze except the fore-castle and the poop.

"After about 30 to 40 minutes of this unequal combat, about 4.20 p.m., the enemy ceased fire and three boats, which were not shattered by shell-fire, one of which became water-logged, were lowered. Two of these boats, containing over 30 survivors, were, it is believed, picked up by one of the German ships.

"The 11 survivors who have been brought in by the *Chitral*, swam to the water-logged lifeboat and would probably have been picked up, but for the fact that about 6.15 p.m. the approach of a British cruiser caused the enemy immediately to withdraw. The *Rawalpindi* continued to burn amidships until 8 o'clock, when she turned turtle to starboard and sank with all remaining hands.

"Meanwhile the British cruiser attempted to shadow the German ships, but in a sudden rainstorm and the darkness of the night they made their escape from the scene.

"This account is given from the narratives of the 11 survivors picked up from the water-logged boat by the *Chitral* and is, of course, subject to correction in detail. It is, however, sufficient to show that the *Rawalpindi* made a most gallant fight against overwhelming odds and went down with her colours flying.

"The search for the two enemy warships is continuing in tempestuous weather both by night and in the brief hours of daylight."

The search, unfortunately, was not successful and both German ships escaped. Fortune undoubtedly favoured them, in that they should have made contact with a weak portion of the Northern Patrol at the time that they did, for if they had been sighted in the forenoon, it would have been by no means so easy for them to escape.

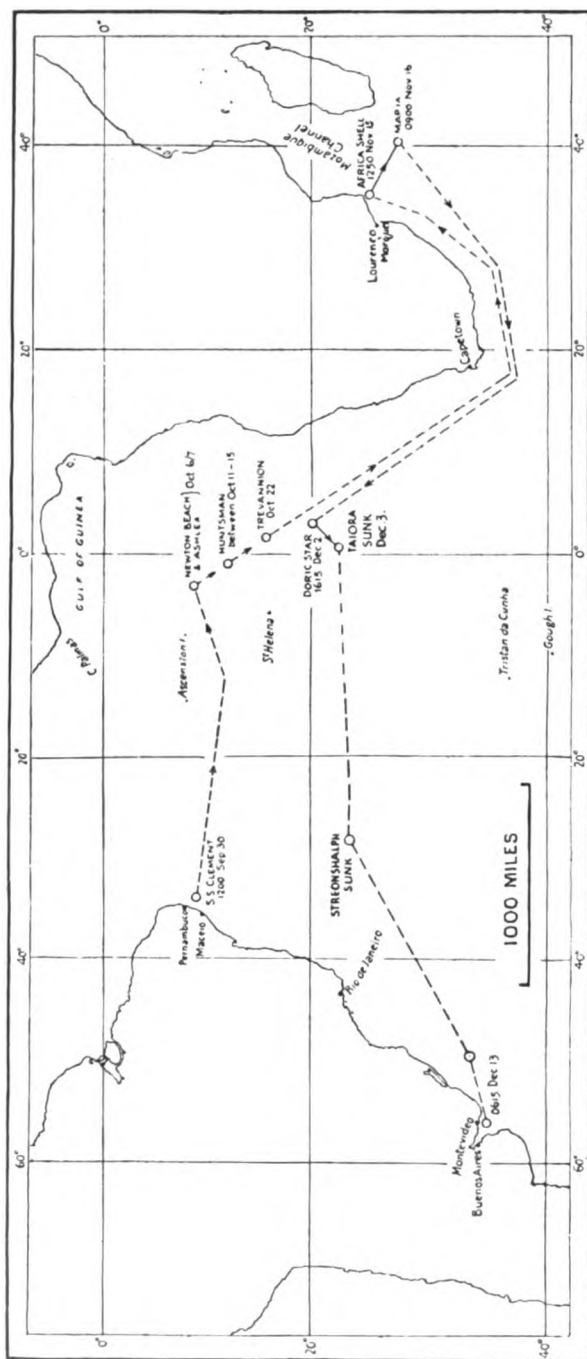
DECEMBER.

Compared with earlier months, December was very full of incident at sea. On December 3, what the Air Ministry described as "a strong formation" of bombers carried out an attack on German men-of-war in the vicinity of Heligoland. Direct hits were said to have been obtained with heavy bombs. All the British bombers returned safely and one Messerschmitt fighter was said to have been shot down—undoubtedly a very fine performance. The Germans, of course, announced that only "very slight material damage" was done, but that one fishing boat was sunk. The fact that any damage at all was admitted seems to point to the fact that the British announcement was not far from actual accomplishment. Several other air fights took place over German waters later on in the month, but they seem to have had little naval effect, except so far as they discouraged or prevented the despatch of mine-laying aircraft.

German mine-laying was further intensified during the month. H.M. destroyer Jersey was damaged by a mine on December 7, but was able to return to harbour; five of H.M. trawlers, the Ray of Hope, James Ludford, William Hallett, Evelina, and Sedgefly, were sunk by striking mines between December 10 and 19, and a heavy toll, too, was taken of merchant ships in the North Sea. In order to give protection against this most insidious form of attack, the Admiralty decided to lay a barrage of mines off the east coast of Great Britain, leaving a channel for navigation between the barrage and the coast, so that enemy minelayers should not be able to reach the channel used by shipping. The intention to lay this barrage was announced on December 26, in order that shipping should be informed of the area to be avoided, which extended from off the Moray Firth to the Thames estuary. A channel was left there between the new barrage and the earlier minefield blocking the Dover Strait which had been notified at the beginning of the war.

News of raiders at large came in again during the month. On December 4 the Admiralty announced that the Doric Star, known to have passed the Cape on her way home from Australia, had been sunk by a raider, of the identity of which nothing was said. On December 2 the German liner Watussi, thought to have been possibly one of the raider's supply ships, was located by the South African Air Force, who ordered her into harbour; her crew, however, preferred to scuttle their ship as soon as they were assured that help was at hand to rescue them. On December 11 a report was received in London that the Deutschland had returned to Germany—as she might easily have done unobserved in the tempestuous weather and short days.

On December 13, however, all doubts and uncertainties were resolved. At 6 a.m. on that day a squadron consisting of the Ajax, Commodore H. H. Harwood, commanding the South American Division; Achilles, formerly of the New Zealand Division, but attached to Commodore Harwood; and Exeter gained contact with the "pocket battleship" Admiral Graf Spee, some 200 miles



DIAGRAMMATIC CHART ILLUSTRATING THE MOVEMENTS OF THE ADMIRAL GRAF SPEE, SEPTEMBER TO DECEMBER, 1939.

east of the estuary of the River Plate. Although the *Spee's* weight of metal exceeded that of the three British ships put together by half as much again, Commodore Harwood unhesitatingly engaged. The *Exeter* at first bore the brunt of the action, as the *Spee* devoted most of her attention to her. She exchanged shot for shot, however, but the *Spee's* weight of metal told, and the *Exeter*, when she had only one gun left in action, was obliged to drop out of the fight—though not to retreat, for she followed up the action while making good damage as far as her company could with their own resources. The *Ajax* and *Achilles* continued the action, making use of their speed and smoke screens to avoid punishment, while keeping the enemy engaged. The Admiral Graf *Spee* had, of course, sustained damage from the British ships' fire, but she was substantially intact and all her guns were still in action. Nevertheless she retreated at her best speed, and finally, after nightfall, took refuge in the neutral port of Montevideo, the capital of Uruguay. The British ships followed, and anchored in the estuary of the River Plate, outside territorial waters, where they were shortly joined by reinforcements.

According to international law, the Graf *Spee* should have left Montevideo again within twenty-four hours, unless she was in need of repairs to render her seaworthy. On that plea the German Minister demanded permission for her to stay longer, and after inspection by a Uruguayan technical commission she was granted seventy-two hours; and repairs were at once taken in hand by a local German firm. In the meantime her thirty dead were buried and her sixty wounded given attention.

On her arrival, Captain Langsdorff, who commanded her, released the masters and chief engineers of nine British merchant vessels which he had sunk—the *Clement*, *Newtonbeach*, *Ashlea*, *Huntsman*, *Trevanion*, *Africa*, *Shell*, *Doric Star*, *Tairoa*, and *Streonsahl*—whom he had kept prisoner onboard. From them a narrative of his cruise became public property, from which it was clear that the *Spee* had been the only raider at large in the South Atlantic, her captures accounting for all the ships that were overdue. Her movements are shown diagrammatically on the accompanying chart, and it is worthy of note that, although she had been at large for three months, she had succeeded in capturing only nine British ships.

The prisoners had been well treated while onboard the Graf *Spee*, but they reported that, up to short time previously, they had been kept prisoner onboard her supply ship, a naval auxiliary named *Altmark*, where they had been closely confined and subjected to various indignities. The *Altmark*, onboard which all the remainder of the British crews, to the number of some three hundred, were still confined, had been in company with the *Spee* until a few days earlier. She could not be far away, therefore, and it was hoped that she would soon be laid by the heels and the prisoners released.

With Captain Langsdorff's conduct there is no fault to be found; the same cannot be said of the German Minister at Montevideo, for as soon as the Graf *Spee* arrived, he issued or allowed to be issued, a baseless story that shells containing poison gas had been used by the British, and he did his best to browbeat the Uruguayan authorities

into departing from their attitude of strict correctitude under international law. What actually passed between the various Germans concerned in the seventy-two hours that the Graf Spee spent in Montevideo is not known, and possibly never will be known. It was said that Captain Langsdorff had telephoned to Hitler personally, and had received orders as to what he was to do direct from the noble Fuehrer himself; in view of what happened afterwards, this seems inherently likely, but there is no proof of it.

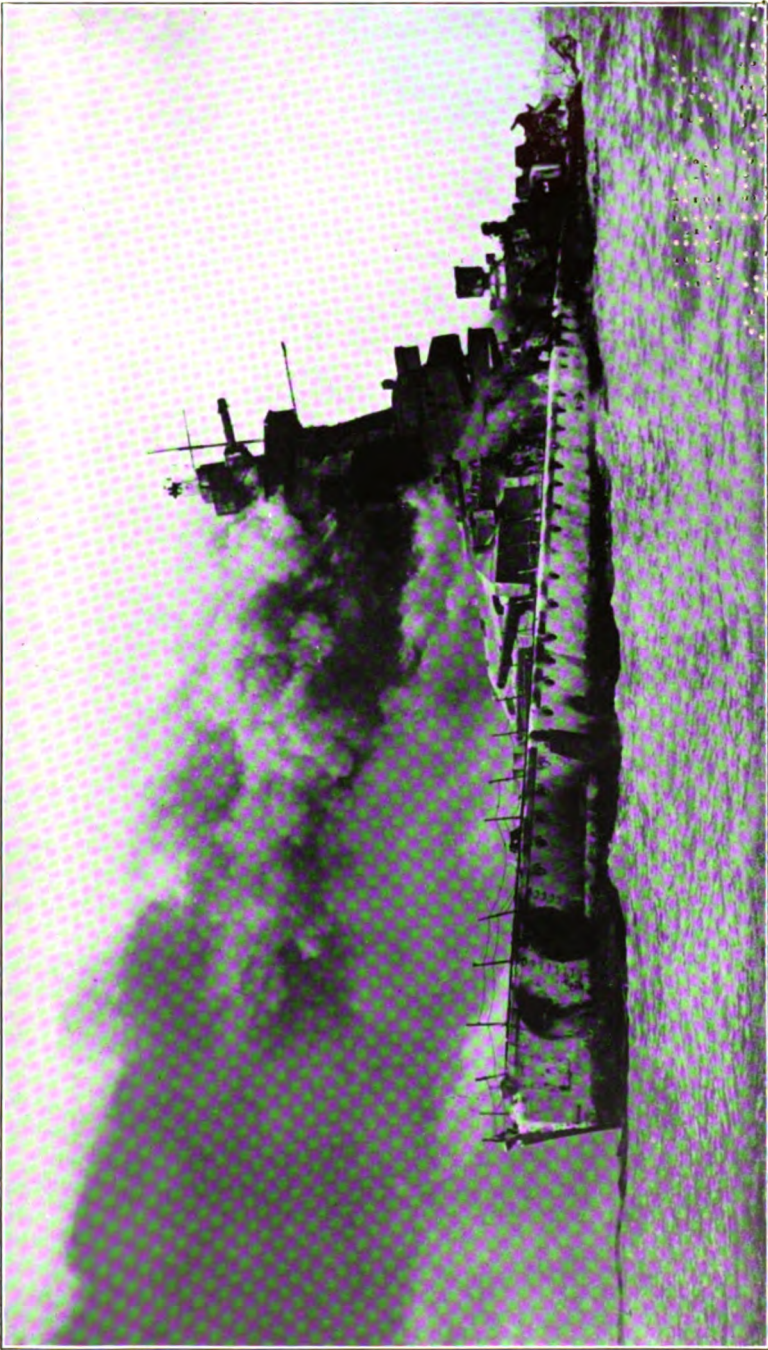
During her stay, rumour was extremely busy reinforcing the British squadron waiting outside. The Admiralty had announced that it had been strongly reinforced, and report placed there not only the French battleship Dunkerque, but the Renown and the Devonshire. A few days before the action, it had become known that the Renown and Ark Royal had been at Capetown on December 3—after the Graf Spee had doubled back into the Atlantic—and the reliability of the rumours of her joining Commodore Harwood may be judged by the fact that they arrived at Rio de Janeiro, 1,000 miles to the northward, while the Spee was still in Montevideo. But the rumours may well have borne their share in bringing about the final result.

On December 17, Captain Langsdorff transferred some seven hundred of his ship's company to the German merchant ship Tacoma which was lying in the harbour. At 6.20 p.m. he took his ship out of the harbour, and as soon as he was outside the three-mile limit turned her out of the ship channel to the westward over the shoals, and scuttled her just before 8 p.m. The British ships waiting for her had therefore no more work to do. Their work had been well and truly done already; courage and determination had won the battle just as surely as if the Admiral Graf Spee had been sunk at sea by their guns. It was afterwards revealed by Mr. Churchill that the only reinforcement they had received up to that time was the Devonshire, another 8-in.-gun cruiser, only slightly more powerful than the Exeter.

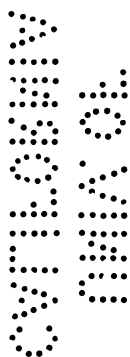
Captain Langsdorff returned to Montevideo Harbour and arranged for the transfer of his men to Buenos Aires. When he had arranged, to the best of his ability, for their well-being there he committed suicide. A sensitive and highly-strung man, it seems that he could not bear the shameful position in which he had been placed.

Commodore Harwood was forthwith awarded the K.C.B. and promoted to Rear-Admiral, while the captains of his three ships were awarded C.B.'s and various other awards were later announced to officers and men who had distinguished themselves in action.

In the meanwhile the month had been by no means uneventful in home waters. On December 12, it was announced in Germany that the great liner Bremen, which had been taking refuge in Murmansk since the beginning of the war, had reached Bremerhaven. The next day it became known that she had been encountered on her voyage by a British submarine, which had been within close range of her. There was a certain amount of uninstructed criticism of the supposed inaction of the submarine on this occasion, but it was immediately stilled when her full report became available a few



THE END OF THE ADMIRAL GRAF SPEE.
*Scuttled by her own company off Montevideo, December 17, 1939.
(Associated Press photograph.)*



days later. The submarine was the *Salmon*, Lieutenant-Commander E. O. B. Bickford, and her story was as follows.

Not long after her turn of patrol duty in the North Sea began she sighted a large ocean-going U-boat, outward-bound and moving fast on the surface, which she sank with a well-directed torpedo. Nothing happened for a few days, but on December 12 in the morning she was forced to dive by the approach of enemy aircraft. After an hour she came up to periscope depth on hearing the propellers of a large ship, and sighted the *Bremen* approaching. She immediately surfaced, in a position well on the *Bremen's* bow, and signalled her to stop; no notice was taken of the signal, but before she could fire a shot across the bows to draw attention to it, she was again forced to dive by the approach of aircraft. She was in such a position that she could have fired up to six torpedoes into the *Bremen* without the possibility of missing; but to do so, would have left her company adrift in the boats, and that is not a thing which a British seaman does, even if there is a military advantage to be gained from it. In this case there was none.

Twenty-four hours later, Mr. Bickford must have been glad that he had not expended his torpedoes uselessly against a merchant ship, for he was presented with the submarine officer's ideal target. While submerged he sighted the greater part of the German surface fleet—the battle cruisers *Scharnhorst* and *Gneisenau*, the “pocket battleships” *Deutschland* and *Admiral Scheer*, two new 10,000-ton cruisers *Hipper* and *Blucher*, and the light cruiser *Leipzig*. At first they seemed out of range, but an alteration of course made a long shot possible, and he fired a salvo of six torpedoes, the first of which should have hit the *Leipzig*. Three explosions were heard, but as the *Salmon* was at once counter-attacked by destroyers with depth charges, Mr. Bickford could not observe the result of his shots at the time; when he returned to the vicinity after dark, however, he found the sea for miles round so thickly coated with oil fuel that breathing was difficult. It would perhaps be over-confident definitely to assert that a German ship was sunk; but that there was very severe damage is beyond dispute, and it was, indeed, admitted by Germany.

This was not the only success of the kind. On December 14, the *Ursula*, Lieutenant-Commander G. C. Phillips, sighted a cruiser of the “*Köln*” class screened by six destroyers off the mouth of the *Elbe*. Despite the screen, she attacked successfully and sank the cruiser with a torpedo.

A German submarine, diverted for the moment from the more congenial occupation of sinking merchant ships, had some success against a man-of-war. On December 29, the *Barham* was hit by a torpedo from a submarine when off the west coast of Scotland, and three men were killed. The ship, however, was able to reach harbour under her own power, and was soon repaired and in service again. Some time during the month, too, though it was not announced until some months afterwards, the fleet flagship *Nelson* was damaged by a magnetic mine. She, too, was able to reach harbour under her own steam, and was repaired. The manner in which these

old ships were found to stand up against the attack of weapons much more powerful than those in existence when they were designed was most reassuring.

JANUARY, 1940.

After the stirring events of December, January provided little news of the same sort for the first ten days ; German mines, however, continued to take toll of British and neutral shipping, though in diminishing degree. The diminution was due to the success of the Navy's technical officers in devising means to deal with Hitler's " weapon against which there is no defence." They had been in possession of the details of the magnetic mine less than two months, but already a method of dealing with it by sweeping had been devised. The fact of this was made known, but no details of the device itself, of course, were divulged.

This, however, was not all ; besides being able to clear minefields of which the existence and positions had become known, some device which would protect ships against magnetic mines unwittingly approached was needed, in the same way that the paravane protects ships against moored mines. This too, was forthcoming, for the Vernon's officers invented and developed a method of demagnetising ships so that they would have no more effect on the magnetic mine than a wooden ship would have. This, success was not announced at once, but it became public property before very long, because the means by which it was accomplished was a conspicuous girdle of electric cable running round the ship at the bulwark level, and ships so fitted began to arrive in foreign neutral ports. This girdle was known in the Navy, when it was being developed as a secret device, as the " de-gauss-ing " girdle, thus named because, in scientific parlance, the " gauss " is the unit of " magnetic flux." It was energised in a particular way by electric current so that the natural magnetism of the ship was entirely neutralised—a result which some men of science prophesied would be found quite impracticable of achievement, but which was, nevertheless, successfully accomplished by the Navy's device.

The degree of destruction of merchant shipping achieved by submarine and mine was evidently disappointing to the enemy command, and they decided to supplement it by direct attack from the air. This form of attack naturally appealed to them, for though it was no more possible for an aircraft to determine definitely the character of a ship attacked than for a diving submarine to do so, it satisfied the lust for indiscriminate destruction, chiefly of those who are not in a position to fight back. A number of merchant ships, fishing boats, and even a lightship tender were attacked by bombs and machine guns in the North Sea on January 9. The enemy succeeded by close attack in sinking three of the ships, and many of the lightshipmen were wounded on their way out to take over their duties. The attacks were repeated the following day, but with less result, as the weather allowed British fighters to engage and drive off the raiders, impossible the day before on account of mist.

Air attacks on trawlers and other fishing boats were continued and intensified from that time onwards, and on January 12 the enemy descended to the depths of inhumanity by attacking lightships themselves. Neutral ships continued to be almost the chief target for Nazi brutality, possibly because they were more often to be found sailing alone and unprotected; but in any case the Germans gave up all pretence of discrimination, and blatantly sank enemy and neutral alike—provided they were ships of the smaller neutrals—with the obvious intention of terrorising the latter into ceasing to use the seas. The Dutch steamer *Arendskerck* was stopped by a U-boat in the Bay of Biscay, and although she was bound from Holland to the Dutch Indies, the crew were ordered into their boats and the ship was torpedoed. They were picked up after many hours, but for all the U-boat cared they might never have been heard of again. The Swedish steamer *Pajala*, carrying wheat from Argentina to Sweden, was torpedoed without warning in the North Sea, but her crew were rescued by a British warship which promptly counter-attacked the U-boat—with success according to the Swedish account. The Greek steamer *Ekatontarchos Dracoulis* was sunk by a U-boat 150 miles off the coast of Portugal, and a number of her crew were killed. All these cases aroused intense resentment in the countries concerned.

The Navy suffered a number of casualties during the month. On January 16 the Admiralty announced that the submarines *Seahorse*, *Undine*, and *Starfish*, which had been engaged on a particularly hazardous service, had failed to return or report and must, therefore, be regarded as lost. It became known later that the entire companies of the last two were prisoners of war in Germany, but there were no survivors from the *Seahorse*.

On January 22 the loss of the *Grenville*, flotilla leader, Captain G. E. Creasy, with eighty-one deaths, through either a mine or a torpedo, was announced. Two days later, the loss of the flotilla leader *Exmouth*, Captain R. S. Benson, by the same agency was reported, and in this case there were no survivors, since it occurred at night in bad weather. These losses were the inevitable price of command of the sea, and against them must be put the fact that so effective was the protection given to sea communications by the Navy that from the beginning of the war the ships lost in convoy were less than one-fifth of 1 per cent.

An example of the efficiency of the protection of convoys was given towards the end of the month. On January 30, a U-boat attacked a convoy and succeeded in torpedoing the British steamer *Vaclite*, whose crew were rescued by an Italian ship. The escort immediately counter-attacked the U-boat, but lost contact with her after a time. Later in the day a flying boat of the convoy escort sighted the U-boat on the surface, unable to dive as the result of the destroyers' depth charge attack, and attacked her with bombs and machine guns. The attack had to be broken off because of fog, but the flying boat then informed surface craft of the position of the enemy; destroyers sent to the spot found that the U-boat had then sunk, but they picked up survivors in the U-boat's collapsible

rubber boat. This was the first attack on a convoy by a U-boat for some time, and the result must have been profoundly discouraging to the enemy. That perhaps accounted for their turning their energies more and more to air attack and mining.

On January 29, widespread air attacks were made in the North Sea on British coastal shipping, and thirteen ships were attacked, including two entirely defenceless lightships. Fighters of the R.A.F. counter-attacked the raiders, but the weather favoured the latter as clouds provided cover. Some twenty machines took part in the attack, and their chief success was against the East Dudgeon lightship, in which seven out of the eight of her crew were killed. This, no doubt, was celebrated as a famous victory in Germany. The other victims were chiefly trawlers, and it was these attacks which determined the Admiralty to provide fishing vessels with machine guns for their self-defence and to train the crews in their use.

On January 25, the German High Command announced that the pocket battleship *Deutschland* was to be renamed *Lutzow*, as her former name was required for a larger ship—presumably one of the two 35,000-ton battleships under construction. There is nothing surprising in that, but it seems very curious that in selecting a new name for the *ex-Deutschland* they should have taken one which had been already in use; and this exaggerated shuffling with names certainly suggested that the Salmon's salvo of torpedoes might well have done greater execution than had been imagined.

On January 21, an incident occurred in the Pacific which had unexpected repercussions. The Japanese liner *Asama Maru* was stopped 35 miles from the coast of Japan by a British cruiser, and twenty-one Germans, survivors from the German liner *Columbus*, which had been scuttled by her crew in the Atlantic many weeks before, who were on their way home to Germany via Vladivostok and Russia, were removed as prisoners. This action was strictly in accordance with international law, but the Japanese took unexpected umbrage at it, and there were anti-British demonstrations in Tokyo. The Japanese protested, not so much on the basis of international law, as because it was looked upon as an affront to them that the incident should have occurred almost within sight of the Japanese coast. The Japanese Government, in making this protest, seemed to be yielding to popular clamour at home rather than basing their action on precedent or law, for they themselves had rarely hesitated to stop foreign ships in Chinese waters; but that did not make the dispute any easier to settle.

On January 31 the *Ajax* arrived at Plymouth and was given a great reception. The same day the Admiralty announced that they had taken over responsibility for control of all shipbuilding in the country, in order that the national resources should be distributed to the best advantage between naval and mercantile work. Sir James Lithgow was appointed an additional member of the Admiralty Board to take charge of this branch of its activities.

FEBRUARY.

Air attacks on shipping in the North Sea were continued throughout the month whenever the weather favoured this "tip and run" form of warfare; in particular attacks were made on a considerable scale on February 3, 9, and 22. In the first of these the enemy claimed to have sunk nine merchant ships in addition to "one minesweeper and four patrol boats." Actually the Norwegian ship *Tempo* was the only ship sunk. She was attacked by three German bombers off the north-east coast of England, and hit by bombs which sank her. The crew took to their boats which were fired on by the Germans with machine guns while making for the land; and many of those who survived that attack were drowned in the rough seas before they could reach the shore. Four British merchant ships were attacked further south, and some hits were made, but they all reached port. The minesweeper claimed as sunk was probably H.M.S. *Sphinx*, which was actually hit by a bomb and badly damaged. She was not sunk then, however, and was being towed back to harbour, which she would have reached but for the very heavy weather which developed, in which she was lost two days later. The "four patrol boats" of the German claim were fishing trawlers. Repeated attacks made on a British convoy were all repulsed by the A.A. fire of the escort. On the other hand, R.A.F. fighters brought down three of the attacking Heinkels, and so damaged another that it was not expected to reach Germany. One of those brought down crashed near a Yorkshire farmhouse.

The attack on February 9 was very similar. One bomber was brought down off the Forth and others damaged; the Germans admitted the loss of one, so the real loss was almost certainly larger. Unfortunately, they had some more success on this occasion, H.M. trawlers *Robert Bowen* and *Fort Royal* being sunk by bombs, with a loss of four officers and fourteen ratings; on the other hand, no merchant ship was sunk. In the third of the raids mentioned at least two of the marauders were again brought down, one in the sea and one on shore; and trawlers attacked at sea were able to reply to the machine-gun fire with their own guns with which by this time they had been supplied. This was by no means to the taste of the attackers, who promptly discontinued their attacks and went to look for some more helpless prey.

The dispute with Japan over the Germans removed from the *Asama Maru* was settled early in the month, largely through the skilful diplomacy of Sir Robert Craigmiles, the British Ambassador in Tokyo, on a basis of compromise. The British Government agreed to release to Japan nine of the arrested Germans, on the ground that there was some doubt regarding their military status. This was accepted as a sop to their pride by the Japanese Government, which, however, did not formally withdraw their demand for the surrender of all twenty-one. At the same time, instructions were given that belligerents of military age were not to be accepted as passengers in Japanese ships in future, and on that basis, the need for stopping Japanese ships at sea would not arise.

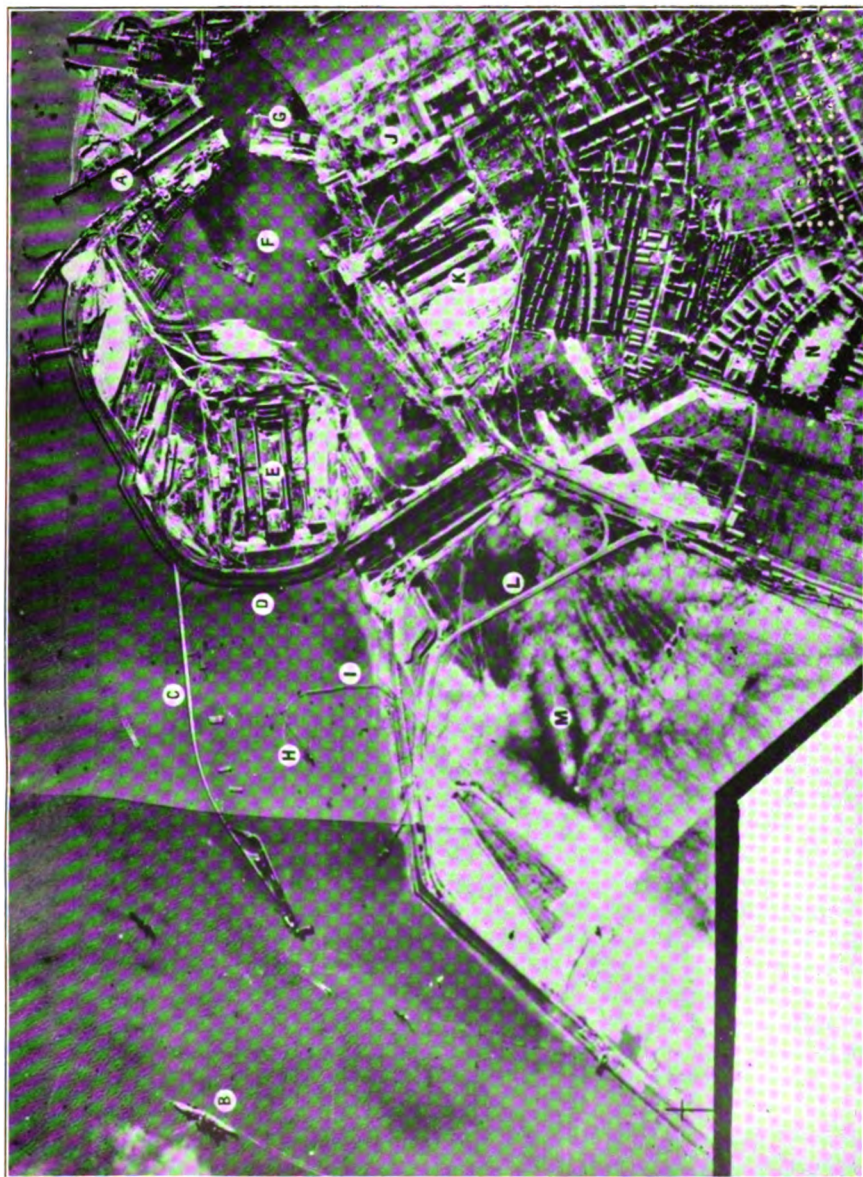
On February 9, H.M.S. *Antelope*, Lieutenant-Commander R. T. White, achieved the remarkable feat of sinking two U-boats in one day ; they had attacked the convoy of which the *Antelope* formed part of the escort. On February 14, the Admiralty again announced the sinking of two U-boats, which had been responsible for the sinking of three large merchant ships, the *Gretafeld* (10,191 tons), *British Triumph* (8,501), and *Sultan Star* (12,306). These results were sufficiently remarkable to induce the Admiralty to depart from their well-established practice of not as a rule announcing casualties to U-boats until sufficient time had elapsed for the news not to be of advantage to the enemy.

On February 15 the *Exeter* arrived at Plymouth and she, too, was given a rousing welcome. Mr. Churchill, accompanied by the First Sea Lord and Sir John Simon, went to the west country port to welcome the ship, and made a speech to the ship's company. On February 23, detachments from the *Ajax* and *Exeter* came to London and were inspected by the King on the Horse Guards Parade, when he also held an investiture for those who had been decorated for their services in the action of the River Plate. The "*Exeters*" and "*Ajaxes*" were afterwards entertained to luncheon by the Lord Mayor at the Guildhall, at the same time that the *Achilles* was being accorded a civic welcome at Auckland. Telegrams were exchanged between the Lord Mayor and the Mayor of Auckland in terms appropriate to the occasion.

As a fitting postscript to these commemorations, it was later announced that the wreck of the Admiral Graf *Spee* had been sold locally for scrap at a price of some £1,000.

One exploit of the month stirred the imagination of the world and evoked a chorus of approbation in many quarters, particularly in the United States. On February 15, it was reported that the German auxiliary *Altmark*, in which were the three hundred prisoners from British merchant ships captured by the Admiral Graf *Spee*, was passing through Norwegian territorial waters on her way back to Germany. The next day she was recognised by British aircraft, and as it was known that the prisoners were still onboard, British ships were sent to the spot. H.M.S. *Intrepid*, destroyer, intercepted the ship, and found that she was being escorted by a Norwegian torpedo boat, the captain of which stated that the *Altmark* had no prisoners onboard and requested the *Intrepid* to leave Norwegian territorial waters. While the parley was in progress, the *Altmark*, which up to then had been on passage south, turned aside and entered the *cul-de-sac* Josing Fjord ; the *Intrepid* withdrew.

The Admiralty, however, knew that the prisoners really were onboard, and as the British Government held that for the *Altmark*, a naval auxiliary, to use the shelter of neutral waters for the purpose of carrying out an operation of war—the transport of the prisoners to Germany—which she could not possibly have achieved without that shelter, was an infringement of Norwegian neutrality, the ships on the spot were ordered to secure the release of the prisoners, even if so doing involved entering and acting in territorial waters. Acting in accordance with these orders, H.M.S. *Cossack*, Captain P. L.



WILHELMSHAVEN FROM THE AIR.

A. Present harbour entrance; B. Battleship; C. New mole; D. Position for new lock entrance; E. New locks under construction; F. North harbour; G. Cofferdam; H. Dredger; I. Pipeline; J. and N. Barracks; K. Dry dock under construction; L. Light railway; M. Reclamation area.

(Official Air Ministry photograph.)

Vian, entered Josing Fjord after dark, using her searchlights in order to navigate that narrow and difficult water. Captain Vian found the Norwegian torpedo boat still guarding the entrance, and consequently demanded of her captain that the Altmark should be boarded and searched, in order that international law should be carried out by the release of the prisoners. He offered to join Norwegians with his own boarding party, and, if desired, to escort the Altmark back to Bergen where the search could be carried out under full Norwegian authority ; but he insisted that the Norwegian assurance that there were no prisoners onboard her should be put to the proof. The Norwegian commander refused that offer, but eventually agreed to accompany the Cossack's boarding party—a decision from which he later departed when he found that there was likely to be a struggle.

The Cossack thereupon entered the fjord and approached the Altmark, which tried to ram her ; she failed and only succeeded in running herself ashore stern first at the head of the fjord. In the meantime, the Cossack had put her bow alongside, and an armed party boarded. They were fired on and Mr. J. J. F. Smith, gunner of the Cossack, was severely wounded. Fire was returned, but the Altmark's crew were quickly overpowered and the ship was searched for the prisoners. While this was in progress, some of the German naval seamen, who had been put onboard the Altmark by the Graf Spee two months before as an armed guard over the prisoners, clambered over the stern, made their way ashore over the ice, and opened fire on the "Cossacks" who were on the Altmark's deck with rifles. This fire was also returned, in the course of which two Germans, who were on the ice on their way ashore, were hit. The total German casualties were afterwards stated as four killed and five severely wounded, some of whom afterwards died ; but it is clear that there would have been no firing at all if the Germans had not fired the first shot.

In the meantime, the boarding party had opened the hatch to one of the holds and shouted down, "Are there any British down there?" There was an answering shout of, "Yes," to which there came the further reply, "Well, the Navy is here"—a phrase which has caught the country's imagination. The prisoners were all taken into the Cossack, to the number of two hundred and ninety-nine, and the destroyer left the fjord without further molesting the Altmark, much to the astonishment apparently of her company. But the work they came to do was done and the Altmark might then avail herself of neutral sanctuary. The prisoners were landed at Leith some hours later, where a number of them were in need of medical treatment after the hardships and confinement they had endured.

There was, naturally enough, considerable argument through diplomatic channels over the whole affair, the British Government maintaining that Norway had been inexcusably lax in allowing the Germans, under the guise of "innocent passage," to make use of their waters for what were clearly operations of war ; and that her laxity had left the British no resource but to redress the disadvantage by their own resources. The Norwegian Government,

on the other hand, endeavoured to represent their conduct as strictly impartial and correct—they could do no less in order to save their own faces and forestall German resentment. There was in this country considerable sympathy for the difficult position in which Norway, a small and weak neutral country, was placed by German abuse of her neutrality; but there was no intention to allow her difficulties to be resolved at the expense of British subjects. In any case, the prisoners had been released, and in no circumstances would that action be reversed; the questions at issue between Norway and England over the affair could well be left for settlement by diplomatic discussion.

On February 20, H.M. destroyer *Daring* was torpedoed by a German submarine, and sank with a loss of nine officers and one hundred and forty-eight ratings. Between then and the end of the month, two of H.M. trawlers were also sunk by enemy action—the *Fifeshire* by aircraft attack and the *Benvolio* by mine.

On February 15 it was announced that it would be impracticable to present Navy Estimates in the usual form without furnishing the enemy with information which would be of great assistance to him—*vide*, page 272—and that they would be presented in token form in order to give the House of Commons an opportunity of discussing naval affairs. This was done on February 27, when Mr. Churchill took the opportunity of delivering another of his reviews of the naval situation which the House and the country have found so illuminating and acceptable. He described how successfully the Navy was fulfilling its time-honoured role of keeping command of the sea and ensuring the maintenance of the sea traffic by which the country lives and has in the past always prevailed over its enemies. And he concluded his review with the following words:

“In 1915, I was able to say that our command of the seas was more thorough than ever before in our history, and—although I was not allowed to preside over it—it so continued for more than eighteen months. I will not make any prophecies about the future which is doubly veiled by the obscurities and uncertainties of war. But, personally, I shall not be content, nor do I think the House should be content, if we do not reach and maintain a control of the seas equal to the highest standards of the last war, and enable the Navy once again to play a decisive part in the general victory of the Allies.”

H. G. T.

CHAPTER IV.

THE MERCHANT NAVY IN WAR AND PEACE.

WHEN the Royal Navy was mobilised on the outbreak of the war, the Government took control of merchant shipping and of the principal ports of the country as well as of all the shipyards, those concerned with the repair as well as the building of ships, both of war and of commerce. These simultaneous events, ensuring unity in direction of the affair at sea, were without precedent in our history.

The course which the struggle has since taken suggests that if these measures had not been adopted, the opening weeks of the war might have been marked by a disastrous loss of tonnage. The enemy, it subsequently became known, had U-boats stationed at the focal points of the trade routes in readiness for the outbreak of hostilities, expecting to sink ships which were without defence, and had prepared many thousands of mines, including a new type of magnetic mine, to be sown in the traffic lanes of commerce, and particularly in the approaches to the most frequented English ports. The Germans had, in effect, planned a blockade of this country, which was to be pressed home without regard for the lives or property of neutral seamen, shipowners, or merchants. The failure of that design was the initial British success in the war. The prompt action of the Board of Trade and the Admiralty not only saved many merchant ships from destruction, with the loss of their cargoes, but it established confidence in the administration of the sea services.

In order to appreciate the significance of the Government's action on the outbreak of war, it should be recalled that the Royal Navy belongs to the nation and is built, manned, and administered by the Admiralty on behalf of the nation, while the Merchant Navy, provided by private capital, is managed by business men (who are usually described as "shipowners" though they are for the most part only the trustees of investors), and is manned by officers and men, who, apart from naval reservists, are uncovenanted to the State. The Merchant Navy,* as it is called, consists of upwards of 300 fleets; some of these are grouped, though, as a rule, preserving separate managements, such as the P. and O., Furness, Ellerman, Alfred Holt, and other groups. These ships, to the number of approximately 2,500, usually go about their business in the great waters of the world unfettered by the Government, except in relation to

* Incidentally, it may be added that though the term "merchant navy" is, as a matter of convenience, applied to the ships of commerce, in the strict sense the word "navy" should be used only for the men-of-war of a nation, with the implication that the ships form a disciplined body under the control of the State.

matters affecting the safety of life and property and, even in that respect, some of the regulations are less strict than those of Lloyd's Register of Shipping, an organisation of shipowners, shipbuilders, and underwriters, which was created many years ago for the purpose of mutual protection.

The significance of the measure of control over the shipping industry assumed by the Government when the war opened cannot be appreciated unless these considerations are borne in mind. Though the Merchant Navy was, in fact, the mother of the Royal Navy, it is provided by private individuals and managed for profit to the advantage of the nation. In one year (1920) it contributed invisible exports of the value of £340,000,000 to the credit side of the National Trading Account. It provides employment in shipyards and engine shops, in the ports and in offices and at sea for about one million men. In the creation of the great volume of shipping on the Register of the United Kingdom, fully and efficiently manned at all times, the State has had no part since the Navigation Acts were repealed. And as the State can claim no credit in this respect, so it has had no hand in the equipping of the shipyards or the provision of ports round the coasts of Great Britain and Northern Ireland which are used by the merchant ships. The whole maritime effort has sprung from individualistic action springing from what is often described as "the acquisitive faculty"—the desire for profit. Business competition has resulted in a high standard of efficiency.

EXPERIENCES IN FORMER WARS.

The decision of the Government to take immediate control of merchant shipping and the shipyards was a radical measure. It was based on the principle that in time of war private interests must be subordinated to those of the nation. That is especially true in the case of the shipping of a peaceful island which is the pivot of a world-wide maritime Empire, whose man power as well as economic power it is necessary to develop and concentrate as rapidly and effectively as possible in the decisive centres, without much regard to economic considerations. In Victorian days this principle would have been stoutly contested and in none of the wars of that period did the Government attempt to exercise control, in any shape or form, over shipping and shipbuilding. It was then almost axiomatic that war, famine and pestilence offered to owners, as well as builders, equitable opportunities for making large profits so as to balance the losses incurred during recurrent periods of depression. Ships were chartered by the Government for use as transports or otherwise at what were regarded as fair rates and, for the rest, owners made as much money as they could in the open market, building up reserves of capital which were used for the construction of new ships. In this way, the successive wars of the nineteenth century contributed to strengthen all the maritime industries; the profits of war became the resources of peace, and from decade to decade the volume of shipping increased; British vessels carried more than half the world's sea-borne commerce, and the shipbuilding industry developed until

at one time four out of every five ships afloat, under all flags, had been launched from British yards.

When the Four Years' War opened on August 4, 1914, the necessity of subordinating private direction and interests was not at first recognised nor was it realised that, in the event of the enemy's attack on shipping meeting with a large measure of success, the issue of victory or defeat might depend on an adequate supply of tonnage efficiently employed, war needs taking precedence over those of the civil population. Thus it came about that, apart from a war risks' insurance scheme which was introduced by the Government on the outbreak of hostilities, no plans had been made for the control of shipping, the regulation of freights, or the use of the shipbuilding and repairing establishments of the country.

The Transport Department of the Admiralty had been accustomed to charter in peace time such ships as were needed for the movement of troops and other purposes. It continued to function after the war began. As the requirements of the fighting services increased and the Government took over more tonnage for the carriage of essential cargoes, the shipping available for commercial purposes became restricted, and shipping rates in the open market advanced. The action of the law of supply and demand was quickened, first, by the Government's needs; secondly, by the withdrawal from the seas of about 5,000,000 tons gross of German and Austrian tonnage; and, thirdly, by the losses sustained at sea, by the Allies as well as neutrals, from enemy action. The upward movement of freights was rapid.

It was not until October that what were known as "Blue Book rates"—those paid by the Government for such tonnage as was requisitioned—were fixed so as to prevent what was described as "profiteering"; and not until November of the following year was the Ship Licensing Committee appointed, charged with the duty of seeing that such tonnage as was available was employed to the greatest advantage. As late as January 16, 1916, a Shipping Control Committee, consisting of a Cabinet Minister, two shipowners, and a financier, was established to supervise in an advisory capacity all shipping problems. It was not, however, until the end of that year that the Ministry of Shipping, under Sir Joseph Maclay (afterwards Lord Maclay), was appointed with full authority over the whole of the maritime industries as well as the neutral tonnage which was being employed by this country.

It was the first time in history that the shipping industry, as well as the shipbuilding industry, had passed completely under the authority of the State. In announcing this decision, the Prime Minister (Mr. Lloyd George) said :—

"It (shipping) has never been so vital to the life of the country as it is at present. It is the jugular vein, which, if severed, will destroy the life of the nation, and the Government feel that the time has come for taking over more complete control of all the ships of this country and placing them in practically the same position as all the railways of the country at the present moment, so that during the war shipping will be nationalised in the real sense of the term. The prodigious profits made out of freights are contributing in no small measure to the high cost of commodities and I have always found not only that, but they are making it difficult for us in our task with Labour."

This step was the outcome of the slow awakening of the Government and the nation to the fact that on the use of the seas rested the hope of ultimate victory in the first life and death struggle which it had confronted since the end of the Napoleonic Wars, when the nation was, in large degree, independent of overseas supplies of food. The Ministry of Shipping came into existence at this juncture owing to the alarmingly heavy losses due to enemy submarines. Freights had soared sky-high. The average time charter rate which had been 8s. on the deadweight tonnage before the war began, had risen by the end of 1915 to just over 18s. and during the nine months, January–September, 1916, it shot up to an average of 30s. Operating expenses had, of course, in the meantime also advanced; war insurance had become a heavy burden on the industry, and every charge on revenue had increased. But, nevertheless, the industry made large profits during this period. It has been stated that “probably in the first twenty-six months of the war the total net profits of British shipping amounted to at least £262,000,000, with an appreciation in value of from £175,000,000 to about £500,000,000.”* In his monograph, “The War and the Shipping Industry,” Mr. C. Ernest Fayle, who wrote the Official History, “Sea-borne Commerce,” put the figure at £174,000,000. But, in commenting on his much higher estimate, Sir Arthur Salter, then a civil servant, subsequently M.P. for Oxford University, and Parliamentary Secretary to the Ministry of Shipping since October, 1939, remarked :

“It is useless and foolish to blame owners for refusing to take more than five shillings when offered ten. So long as the commodities requiring transport were being purchased by private merchants and sold under competitive conditions, the only result of an individual shipowner choosing to take a lower rate than the market was offering would be that he would give an extra profit at his own expense to the merchant, who was normally no more a deserving object of charity than himself. The merchant would buy his goods in the cheapest market and would sell them in the home market at the highest price he could get. From his point of view the price he had to pay for freight was merely an item in his expenses. It did not affect the competitive price which the purchaser was willing to pay and the merchant was able to get for his sales.

“If an individual philanthropic shipowner cared to give him a ten-shilling freight for which his rival was paying twenty shillings, that would have been so much more in his own pocket. And nothing short of a complete system of control, applying at least to that particular article, could alter this situation. Government action alone could make it either possible or useful to reduce freights below their full competitive level.

“In these circumstances no blame whatever can attach to shipowners for taking the rates they could get. So far, of course, as particular shipowners attempted to evade the control or the limitation of profits or the taxation which the Government ultimately imposed, or in any way impeded or opposed the Government in taking such action, they cannot plead this excuse. But those shipowners who accepted their obligations and assisted the Government in extending their control are liable to no just criticism for taking such profits as the market afforded them. It was the Government alone who could have taken action which would have either reduced shipping profits or appropriated them to the Exchequer.”

The shipping industry was not, of course, the only one which fared well at this period in the war; the returns to investors in many industries favourably affected by the demand for munitions,

* “Allied Shipping Control,” by Sir A. J. Salter, M.P. (Clarendon Press).



THE ROYAL BARGE.
(By courtesy of the builders, Messrs. Vosper, Ltd.)

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food and stores, were phenomenal and the working classes, owing to high wages, shared in this mirage of prosperity.

"Business as usual" was succeeded, so far as shipping and shipbuilding were concerned, by business *not* as usual. In the later months of the war the scales were tipped decisively against British shipowners, though neutral shipping, operated at a lower cost level and with less burdensome taxation, continued to prosper amazingly. In subsequent years British owners were confronted with a deeper and longer period of depression than had ever before been experienced, which absorbed all the profits of the war. It was so serious that in 1934 and 1935 a subsidy was voted by Parliament to tramp shipowners to save many of them from bankruptcy.

TRANSPORT OF THE EXPEDITIONARY FORCE.

The lessons of the Four Years' War were not without their influence on the Government when the present struggle opened. It was feared that the enemy might at once resort to unrestricted submarine warfare, in spite of pledges which had been given to respect not only international law but also the dictates of humanity. In these circumstances, there was no saying how serious the shipping losses in relation to the sea-going tonnage—2,000,000 tons less than in August, 1914—might be. So it was determined that, on the one hand, shipping should be used to the greatest national advantage from the opening of the struggle, and that the law of supply and demand should not again raise freights to dizzy heights. Within a few days of the declaration of hostilities, the Marine Department of the Board of Trade, which had taken over the limited peace duties of the Ministry of Shipping of 1916-18, took virtual control of all tonnage afloat under the British flag as well as the shipyards, and administered the War Risks' Insurance Act, which had been passed in August, from an office which was immediately opened at Lloyd's. Many ships had already been requisitioned for the fighting services and the number was increased within a few days. Overseas voyages of British merchant ships were brought under control by means of licences and a committee was established to consider applications for licences. Four prominent members of the shipping industry, Sir Vernon Thomson, Sir John Niven, Mr. Harrison Hughes, and Mr. Philip Runciman, were included in this committee.

On the outbreak of war, the Government decided, in accordance with the principle that it is an error "to swop horses when crossing the stream," to leave the Marine Department to carry out its pre-arranged plans instead of immediately setting up a Ministry of Shipping. No praise can be too high for the manner in which the understaffed section of the Board of Trade, working in close association with the Admiralty and the War Office, carried on its work in face of many difficulties. It was responsible for requisitioning and equipping merchant ships which were required by the fighting services, whether as armed merchant cruisers, minesweepers, hospital ships, or troopships, etc. Sea transport officers were appointed at all the principal ports of the United Kingdom and abroad to look

after the requirements of merchant vessels requisitioned for the defence services. In conjunction with the War Office and the Admiralty, plans were prepared for the transport of the British Expeditionary Force.

An organisation was at the same time set up for the purpose of providing shipping space to meet the requirements of the Government purchases of essential imports, and commercial agents were appointed in ports all over the world. Chartering committees, drawn largely from members of the Baltic Exchange, were appointed to act on behalf of the Government and a schedule of freight rates was instituted.

Before passing to later developments, a tribute must be paid to the success with which the British Expeditionary Force was transported to France, the movement beginning within four days of the beginning of the war. The co-operation of the railway and harbour authorities was of the most efficient character, and the officers and men of the merchant service earned the highest praise for their skill and resource. This was the greatest and most successful operation of its kind ever performed. In a period of five weeks no fewer than 158,000 men were embarked and conveyed safely—at the rate of three convoys a night on the average—to their ports of disembarkation. One hundred and seventy-four ships were employed and over four hundred voyages were made. The movement was on a greater scale than in the war of 1914–18. Not only was the force larger, but the army had in the meantime been further mechanised. Then the men marched on to the ships, the horses were led, and a light derrick could lift what the soldier could not carry. There were only eight hundred mechanised vehicles in all, and it was a rare load that exceeded two tons. The transportation which began immediately the present war opened involved the carriage of more than 25,000 vehicles, including tanks, some of them of enormous dimensions and weighing fifteen tons apiece or more. The ordinary shore cranes could not raise such weights; special ships were required to carry them and highly trained stevedores to manipulate them.

INTRODUCTION OF THE CONVOY SYSTEM.

Without disparaging the preliminary work of the Board of Trade, the promptitude with which the Admiralty introduced the convoy system at the opening of the war contributed perhaps more than anything else to the safety of shipping. Whereas in the war of 1914–18 convoys, except on short routes, were not organised until nearly three years after the outbreak of war, the Admiralty, on the present occasion, was able to announce within ten days that the system was in partial operation. Naval conditions favoured this action. In 1914 Germany had a fleet of great size which might at any moment have issued from its bases into the North Sea to give battle; the Grand Fleet, with its cruiser squadrons and flotillas, had to be always ready for such an event. Moreover, many merchant captains urged that they had not been trained to steam in company

with other ships. Expert naval opinion was also not completely satisfied that it would be wise to collect a score or more of merchant ships in a convoy (in some cases the number eventually rose to forty-four), as, in case of failure of the defence, the enemy would reap a rich harvest. In the Napoleonic Wars, the convoy system had proved moderately successful. But owing to the advent of the steam engine and the development of the ocean-going submarine, many naval officers considered that it would not be advisable under modern conditions, especially as merchant officers were not accustomed to "station-keeping," which is essential when many vessels are sailing in company. The Scandinavian convoy, which had been adopted early in the war as a test, had resulted, in fact, in heavy losses. Seventy ships were lost between April and December, 1917.

Lord Jellicoe, in discussing this subject in "The Crisis of the Naval War," remarked :

"For the introduction of a system of convoy which would protect merchant ships as far as their port of discharge in the United Kingdom, there were two requirements : (a) A sufficient number of convoying cruisers or armed merchant ships, whose role would be that of bringing ships comprising the convoy to some selected rendezvous outside the zone of submarine activity, where it would be met by the flotilla of small vessels which would protect the convoy through the submarine area. It was essential that the ships of the convoy should arrive at this rendezvous as an organised unit, well practised in station-keeping by day and at night with the ships darkened, and that the vessels should be capable also of zigzagging together and carrying out such necessary movements as alterations of course, etc., otherwise the convoy could not be safely escorted through the danger area. (b) The other essential was the presence of the escorting flotilla in sufficient strength."

What the adoption of the system involved in armed ships has since been revealed by Admiral Sir Reginald Bacon.* When the system was fully in operation, there were nine convoys every eight days on the average on the Atlantic route, on the Cape route, and to and from the Mediterranean. During these eight days no fewer than one hundred and fifty-two ships on the average were escorted, the ocean escort consisting of forty-nine vessels, with seventy destroyers, eleven sloops, and forty trawlers doing protection duty in the submarine zone. Eleven destroyers were also engaged in supplementary duties as well as fifteen smaller ships. It was only when the United States entered the war early in 1917 that it was practicable to adopt the system on anything like a complete scale—first, because insufficient cruisers and destroyers were available, unless the safety of the Grand Fleet itself were to be endangered ; and, secondly, because there were no ports in the United States in which merchant ships could be assembled before crossing the Atlantic. But American co-operation made all the difference. Admiral Sims, who was given the command of the United States Naval operations in European waters, at once realised all the troubles of the British naval authorities.

British and American forces, with the expert advice of ship-owners, began work at once with results which exceeded all expectations. By this time the German submarine service had, it is true,

* "The Life of John Rushworth Earl Jellicoe," by Admiral Sir Reginald Bacon (Cassell).

begun to deteriorate, but, nevertheless, the success of the convoy system was conspicuous—indeed, it saved the Allied cause. The whole situation changed. The shipyards had been unable, hard as they had worked, to replace the losses of tonnage, and month by month the tonnage available had been shrinking. In April, 1917, the sinkings of British ships had risen to 526,447 tons, and of shipping under all flags, Allied and neutral, the losses were 866,610 tons.

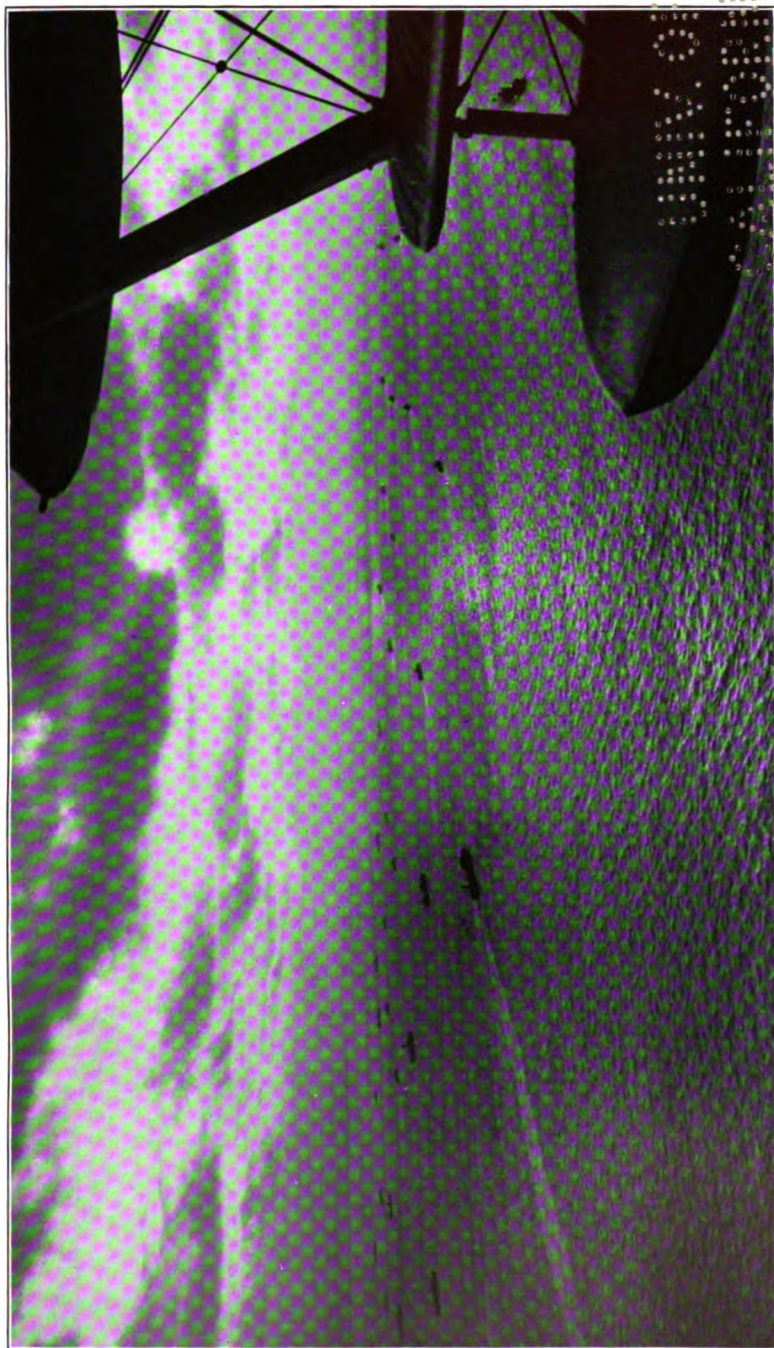
But with the general adoption of convoy the position improved. In the first quarter of 1918, the war and ordinary marine casualties amounted to 1,150,000 tons, exceeding the output of the shipyards by 280,000 tons. In the following three months only 962,000 tons were lost and the new ships which were sent to sea were of 1,245,000 tons, a balance on the right side of 283,000. In the following quarter the gain was 468,000 tons. It was apparent that the submarine had been mastered by means of the convoy system and other offensive defensive measures. In the month preceding the signing of the Armistice only 56,330 tons of British shipping were destroyed by the enemy and in the first eleven days of November the losses were only 15,352 tons.

In the present war, the working of the convoy required close organisation because the Royal Navy had not a superfluity of small craft. Moreover, the United States being neutral, American ports could not be used for the assemblage of merchant ships nor could the American Navy make any contribution to the essential naval forces as it did after it intervened in the war of 1914–18. Nevertheless, as events proved, the convoy system was as successful as it had been in the last days of the war of 1914–18.

FORMATION OF THE MINISTRY OF SHIPPING.

The transport of the British Expeditionary Force had been carried out, the convoy system introduced, and the various freight committees were working smoothly when, on October 13, the Marine Department was divorced from the Board of Trade and became the nucleus of the Ministry of Shipping, with Sir John Gilmour, M.P., at its head; Sir Vernon Thomson, a shipowner with a varied knowledge of the industry, became Principal Shipping Adviser and Controller of Commercial Shipping, with Sir Cyril Hurcomb, a civil servant who had been associated with shipping in the last war, as Director-General, and with Sir Julian Foley, hitherto Under-Secretary of the Board of Trade (Marine Department), as Secretary.

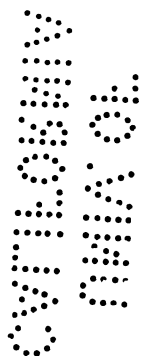
Some disappointment was expressed because Sir John Gilmour, and not a shipowner, was made Minister of Shipping. But the appointment was in accordance with British tradition. But rarely, as on the eve of the Battle of Trafalgar, has a naval officer—Admiral Lord Barham—been First Lord of the Admiralty; only once, and then only to assuage popular anxiety, has an Army officer—Lord Kitchener—been Secretary of State for War, and only once in recent years has a business man actively engaged in any form of commerce or transport been President of the Board of Trade—the



A BRITISH CONVOY AT SEA.

Seen from a flying-boat of the escort.

(*"The Times," photograph.*)



exception was Viscount Runciman. The Board of Education has never had at its head anyone engaged in educational work, though Mr. H. A. L. Fisher, deeply interested in education problems, served there for a short time, nor has a farmer been chosen as President of the Board of Agriculture until Sir Reginald Dorman-Smith, whose hobby was farming and who had been intimately connected with the National Farmers' Union, was given this position in the spring of 1939. The theory is that the Minister who presides over a department should have political experience and acumen, should be in a position owing to his sound judgment to hold the scales evenly when experts disagree, and should be qualified generally to administer his department. On those grounds Sir John Gilmour's appointment was fully justified. He had sat in the House of Commons for nearly thirty years, latterly for a division of Glasgow, one of the great British ports, had been Minister successively for Scottish Affairs and Agriculture, and was for a time Home Secretary. As an administrator with varied experience he was, therefore, well fitted to preside over the new Ministry of Shipping while it was "shaking down," and to act as umpire amid the many experts in shipping and shipbuilding. On the Minister, in association with Sir Arthur Salter, M.P., as Parliamentary Secretary, devolved the difficult task, which no shipowner could have performed satisfactorily, of explaining and justifying the policies of the department in the House of Commons.

One of the first decisions of the new department was to create machinery which would enable it to gain the experience of leading shipowners as well as representatives of the officers and men afloat. The representation of the sea-going and other *personnel* was a radical departure from precedent and was made in recognition of the smooth working of the National Maritime Board, a body of employers and employees which had regulated conditions of service at sea since the last war. It was, in fact, a tribute to the manner in which, without a day's hesitation, the crews of British ships had carried on their work in face of the stratagems of the enemy as well as the ordinary perils of the sea. This Advisory Council was constituted as follows :

Shipowners : Sir Percy E. Bates (Cunard White Star), Sir William C. Currie (P. and O.), Lord Essendon (Furness, Withy and Co., Royal Mail Lines, etc.), Sir Philip Haldin (Court Line, Lamport and Holt), Mr. H. S. Holden (Ellerman Group Steamship Companies), the Hon. J. P. Maclay M.P., (Maclay and McIntyre), Sir Alfred Read (Coast Lines), Sir G. Leighton Seager (W. H. Seager and Co.), and Sir Arthur M. Sutherland (B. J. Sutherland and Co.).

Men's Representatives : Mr. S. C. Bradley (Amalgamated Engineering Union), Mr. D. Bramah (Marine Engineers' Association), Captain W. H. Coombs (Officers' Merchant Navy Federation), Mr. S. James (National Union of Seamen), Mr. D. W. Milford (Transport and General Workers' Union), Mr. H. J. Perkins (Radio Officers' Union), Mr. Geo. Reed (National Union of Seamen), Mr. W. R. Spence (National Union of Seamen), and Mr. A. Wilson (Mercantile Marine Service Association).

The Minister of Shipping was not less prompt in dealing with shipbuilding and repairing. He appointed Sir Amos Ayre as Director of Shipbuilding and Repairs. This step meant no interruption of the task which the Government had entrusted to this practical shipbuilders on the outbreak of war, when he occupied the position

of Chairman of the Shipbuilding Conference, a voluntary organisation representing the industry. What happened was that the chairman of this body was empowered to continue his task under a new title—with all the authority of the Ministry of Shipping at his command.

Simultaneously with these developments, the organisation of the Ministry itself was completed. Sir John Gilmour announced in the House of Commons in November how the department was organised:—

The staff employed at the headquarters of the Ministry of Shipping, excluding messengers and cleaning staff, numbers 822. Of these 699 were already civil servants prior to their appointment to the Ministry; 515 of them were employed before the outbreak of war in the Board of Trade on work now transferred to the Ministry of Shipping. The remainder include forty persons from the shipping industry with specialist experience and knowledge who were nominated before the setting up of the Central Register, for service in the event of war. The balance consists of routine clerical and typing staff engaged through the Ministry of Labour.

In addition to the headquarters staff, the services formerly administered by the Board of Trade now form part of the Ministry of Shipping, e.g., General Register Office of Shipping and Seamen; War Risks Insurance Office; Mercantile Marine Office service at ports; survey service at ports; Sea Transport Officers at home and abroad; His Majesty's Coastguard. The total staff of these services number 2,025.

The Minister of Shipping could claim a higher percentage of technical experts among its staff than probably any other of the new Government Departments: shipowners and the men who man the ships occupied responsible advisory positions.

Early in December a further shipowners' committee was appointed to assist in dealing with the programme of imports and to secure the most advantageous use of space in British liners. Under the chairmanship of Mr. T. Harrison Hughes, the Committee consists of Sir Percy Bates, Mr. Stanley Barr, Mr. C. J. Cowan, Sir William Currie, Mr. Irvine Geddes, Mr. H. S. Holden, Lord Rotherwick, and Mr. W. C. Warwick.

No sooner had the Ministry started than a large programme for the construction of merchant ships on Government account was put in hand. On December 4, the system of licensing voyages was extended to the coastwise trade. It was announced that applications for voyages of all ships over 100 tons gross, except fishing vessels, would be considered by Control committees in nine principal ports.

It was, at first, the policy of the Ministry not to requisition ships for commercial purposes, unless it became necessary for specific and urgent national reasons. But at the beginning of December, requisitioning was extended to include a number of vessels for the transport of cereals purchased by the Ministry of Food from North America. Shortly afterwards the requisitioning of all deep-sea ships was decided upon.

A further development in Government policy was announced on January 31—the transfer from the Ministry to the Admiralty of responsibility for the building of merchant ships. This decision was in accordance with precedent established towards the end of the war of 1914–18. The Prime Minister stated:

“It is sought to secure from this change in organisation the advantages of centralising the use of all resources available for shipbuilding, both in materials and in labour, and of introducing greater elasticity into the allotments of capacity to naval and mercantile requirements.

"The Admiralty will assume the responsibility for ensuring the necessary production of mercantile shipping, as well as that of meeting the requirements of the Navy, it being understood that, as regards the types of merchant ship to be built, the Admiralty will meet the requirements of the Ministry of Shipping, after consultation with representatives of shipowners.

"Sir James Lithgow will be appointed to the Board of Admiralty as Controller of Merchant Shipbuilding and Repairs, and Sir Amos Ayre, who is at present Director of the Merchant Shipbuilding and Repairs Division of the Ministry of Shipping, will become Director of Merchant Shipbuilding and Repairs at the Admiralty."

EXAGGERATED ESTIMATES OF TONNAGE.

Not until the war had been in progress several months—all available neutral tonnage having been purchased or chartered by the Government and a limited scheme of food rationing enforced—was it realised that the country had been short of ships from the first days of the war*. Fortunately the losses inflicted by the enemy were smaller than might have been expected from the ruthlessness with which U-boat and mine were employed. Several Ministers had contributed to the widespread belief that the country had plenty of tonnage at its disposal. Time and again it was claimed that 21,000,000 tons of shipping were available when hostilities began. The Chairman of the Liverpool Steam Ship Owners' Association (Mr. F. Fletcher Hunt) subsequently showed that this was a complete misconception.† He pointed out that the figure of 21,000,000 tons represented the total tonnage of all ships of 100 tons gross and upwards registered in the British Empire. It included, on the United Kingdom register, a large quantity of small craft—hoppers, salvage vessels, tugs, ferry boats, pilot boats, pleasure steamers, dredgers, and the like plying habitually within territorial waters. It also included, on registers outside the United Kingdom, vessels trading on the Canadian lakes and in the coastal trades of India, Australia, and other parts of the Empire. It had, consequently, no relationship to the volume of British merchant navy available for the overseas carrying trades of the United Kingdom.

Outside the United Kingdom, European, and Mediterranean trades, the ships that count are those of 2,000 tons gross and upwards; on this basis Mr. Fletcher Hunt came to the following conclusions :

For the purpose of making a calculation all the necessary material, with certain qualifications as mentioned below, is available in published records. As at September 1, 1939, there were, according to *Lloyd's Register*, 2,475 ships of 15,822,000 tons gross on the United Kingdom register of 2,000 tons gross and upwards. As at November 30 (the latest available date at the time of writing) those figures have been reduced to approximately 2,420 ships of 15,490,000 tons gross by war and marine losses, according to the shipping press.

To those figures have been added the new vessels introduced into service between September 1 and November 30 and vessels captured from the enemy and now being used for trading purposes by us. There have to be deducted, in arriving at the net figures available for our overseas trading, those vessels which since the war have been requisitioned for use as war auxiliaries and other non-trading purposes. Finally, there have to be added those vessels on Dominion registers which are, or are capable of, engaging in trading with the United Kingdom. The material publicly available does not permit of a complete calculation along these lines, but approximately the picture (including Dominion ships) is one of a fleet of 2,500 vessels of 15,600,000 tons gross.

* *Vide* "The British Maritime Industries" by Sir Archibald Hurd ("Brassey's Naval Annual," 1939).

† "The Shipping World" of January 3, 1940.

The purpose of making this calculation is not to indicate that that fleet, if properly used, is not fully adequate, but to put into the right prospective the situation that in fact exists.

PRE-WAR AND POST-WAR CRISES.

What will be the condition of shipping, and its dependent industry, shipbuilding, when at last peace has been won? The object of the control exercised by the Government is, among other things, to prevent "profiteering." Elaborate precautions have been taken to ensure that owners and builders shall not be overpaid for their services. The greater danger is, however, that, in response to political agitation, they may be underpaid, since after the war, as is always the case, a depression will occur, when there will be little employment for tonnage and the shipyards will have few orders. Unless both industries have been in a position to build up reserves during the war, they will not be able to finance their operations in the dark days which lie ahead. Having survived the ordeal of war, they may succumb to the ordeal of peace.

When the war opened all the maritime industries, though highly efficient, were suffering from the effects of foreign competition—supported by subsidies and flag discrimination in the case of shipping, and, as far as shipbuilding was concerned, victimised owing to the contraction of British contracts and the loss of orders from abroad through the restrictions imposed by the various governments.

In the early months of 1939 the state of the shipbuilding industry was so serious and the shortage of cargo ships was so great that the Government intervened. As compared with 1914, the changes in the position were as follows :

Shipping : There were 1,000 fewer ships and 2,000,000 tons less on the register of the United Kingdom than at the beginning of the Four Years' War—that is, ships suitable for the carriage of general cargoes and passengers—and the number of seamen was smaller by 70,000.

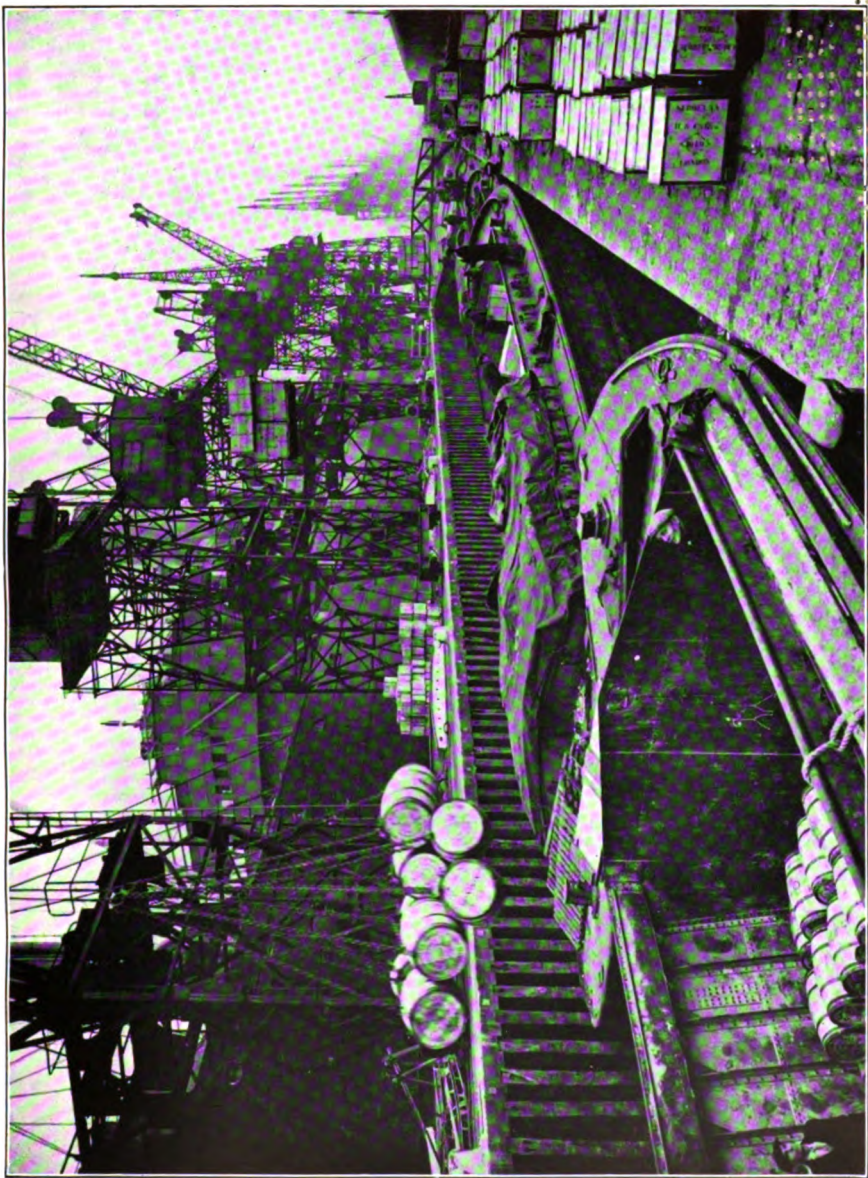
Shipbuilding : The shipyards were responsible for only one-third of the world's output of new tonnage in 1938, whereas in the five years 1909–13 the proportion was 61·1 per cent., while by 1939 the number of craftsmen in the shipyards and engine shops had fallen by 150,000.

Without waiting for the authority of Parliament, the President of the Board of Trade announced in March a programme of assisted building. Applications were immediately received from owners for aid to lay the keels of nearly two hundred cargo ships of about 1,000,000 tons. Thus the shipyards were set to work without delay. As events proved, this was an act of the highest statesmanship.

Shipowners had been asked early in the year, in view of the continued decline of their industry as regards liners as well as tramps, how the Government could most effectively give them assistance in face of subsidised foreign competition.

Not until July, owing to the pressure of political affairs, did an opportunity occur to seek Parliamentary approval of a comprehensive scheme of aid to the maritime industries. In summary the proposals were as follows :

1. TRAMP SHIPPING SUBSIDY.—A sum not exceeding £2,750,000 annually was to be payable for tramp voyages on the advice of a statutory committee—the



WHAT THE U-BOATS CANNOT STOP.
Ships unloading in the Port of London, January, 1940.
(*"The Times"* photograph.)

1

Tramp Shipping Subsidy Committee. The scheme was to come into operation on January 1, 1940, and remain in operation for five years, the amount paid each year being determined by reference to the index representing the average level of freight rates for that year.

2. SHIPBUILDING LOANS.—A sum of £10,000,000 was to be provided, out of which loans would be advanced for the building of cargo vessels, ordered after March 28, 1939, and laid down within two years from the commencement of the Act. Each loan was to be secured by a first mortgage and be repayable within twelve years from the date of the first advance.

3. SHIPBUILDING GRANTS.—£2,500,000 was to be provided for grants towards the cost of building cargo vessels ordered after March 28, 1939. Five separate grants were to be made, the initial grant, payable on completion of the vessel but not earlier than March 31, 1940, not exceeding £500,000. If the average level of freight rates in any one year was higher than a determined index figure, the grant would be withheld in respect of that year, unless the average for the four years was less than this figure.

4. ASSISTANCE FOR LINER SHIPPING.—A maximum sum of £10,000,000 was to be provided for assistance to liner services suffering from foreign subsidised competition. An Advisory Committee was to investigate applications for assistance and advise the Board of Trade on them.

5. MERCHANT SHIP RESERVE.—The Board of Trade was to be empowered to purchase vessels registered in the United Kingdom, for the purpose of creating a reserve for use in an emergency, to the amount of £2,000,000.

The British Shipping (Assistance) Bill, which embodied this scheme, had received a second reading in the House of Commons with the support of all parties when the war began, and then it was abandoned.

The peace crisis, for the alleviation of which it was proposed to legislate, was telescoped into the war crisis, and when the war comes to an end there will be a post-war crisis, the outcome of which will depend on the manner in which the Government rewards both industries for the services rendered during the war. If they are treated as they were in the latter stages of the war of 1914–18 and the subsequent peace adjustment, the eclipse of this country's commercial sea power, which had been going on for twenty years when the present war opened, will proceed at an accelerated pace. British shipping and shipbuilding, burdened inevitably by high wages and high taxation, will be handicapped in resuming their peaceful routine, while the shipping and shipbuilding of neutral countries, having profited by the war, will be in a stronger position than in the past.

The issue of the post-war crisis rests with the Government. Its responsibility is greater than most of the Ministers probably realise. It may be recalled that in justifying the British Shipping (Assistance) Bill in July last, the President of the Board of Trade uttered a warning. There were, he said, a number of industries whose disappearance would be "staggering to the economy of the country, and would cause the gravest social consequences." But, he added, there was this difference about the shipping industry, that, whereas the diminution or disappearance of other industries might be a catastrophe which we could survive, the disappearance of shipping would be vital. "It would immediately reverse the progress of centuries and we should revert once again from an Empire to an island."

ARCHIBALD HURD.

CHAPTER V.

GERMAN THEORIES OF SEA WARFARE

" DESPITE the coming of the air arm and the tendency of the great powers towards increasing their self-sufficiency the world to-day stands again under the sign of a renewed emphasis upon Sea Power and Naval Armaments. Simultaneously, in Germany there has taken place—*almost unnoticed by the general public and even by those more closely interested in world politics—from the World War to the present day a fundamental reshaping of naval strategy forcing us to a profound change in our approach to it.*" * Thus begins the introduction to a little study on "Present-day Naval Warfare," in which Ernst Wilhelm Kruse, a naval writer on the staff of a well-known Hamburg daily and an officer in the German Navy's Reserve, attempts to draw the first comprehensive picture of that new German naval doctrine.† What is that fundamental transformation, which German naval thought is alleged to have undergone between the last and the present conflict and how has it contributed to form and influence the German Navy's present strategy?

THE CONTRADICTION IN TIRPITZ'S POLICY.

To answer this question we must go back for a moment beyond the World War to the beginnings of the rise of the German Navy to the rank of a first-class sea power under Admiral von Tirpitz in the last decade of the past century; for Tirpitz's policy, the fate of the German Navy in the World War and the revolution of German naval thought in the post-war era are intimately linked together. A fundamental contradiction inherent in Tirpitz's policy placed the German Navy in the hopeless position in which it found itself during the World War, which in its turn gave rise, in the decades following the war, to heart-burning criticism out of which was to arise the new German conception of naval warfare.

Admiral von Tirpitz, as Chief of Staff to the High Command between 1892 and 1894, had laid the foundation for his great work of the resurrection of the German Navy from the deplorable state into which it had fallen during the 'eighties and early 'nineties of the last century by evolving a basic tactical and strategic doctrine. In the famous Service Memorandum No. IX he had condensed that doctrine into the following statements: that war at sea could be successfully waged only by striving for the "command of the sea,"

* My italics.

† See "Brassey's Naval Annual," 1939, pp. 97-99.

not by cruiser warfare or any other means ; that such " command " could only be acquired by one of the belligerents at the expense of the other, and that for this as well as other reasons naval warfare, in contrast to land warfare, could only be waged effectively and successfully by a strategic offensive on the enemy's coasts, whereas a strategic defensive left a belligerent in a very difficult and well-nigh hopeless position ; that finally to carry through such an offensive a superiority of at least one-third was indispensable.

These clear and sound ideas formed an excellent basis for the strategy of the German Navy as long as that strategy was directed against an opponent—the Franco-Russian forces in the Channel and the Baltic—over whom the German Navy could hope to acquire such a superiority of 30 per cent.* When Tirpitz, however, recalled from the Far Eastern Station to master the obstinate Reichstag in June, 1897, persuaded the Kaiser that Germany must build not only a battle-fleet, but a battle-fleet directed primarily against Great Britain to prevent that country, so he claimed, from destroying Germany's economic rivalry in the bud by a sudden attack in force, he had to base this new policy upon strategic assumptions running directly counter to the doctrine which he had just established with so much emphasis. Unable to hope by any stretch of phantasy that he would be able to create a 30 per cent. superiority over the British Fleet Tirpitz was obliged to have recourse to the ingenious expedient of his famous " risk-theory " openly proclaimed in the second Naval Law of 1900, but, as we know to-day, underlying already the first law of 1898.

The essence of that theory was that as the German Navy could not be made strong enough for a reasonable chance of victory against every opponent it should be made so strong that its destruction would cost even the strongest sea power such heavy losses, endangering its supremacy *vis-à-vis* third navies, that the mere thought of that risk would act as a deterrent against an attack. In other words, unable to provide the objects to be protected—the German oversea communications and interests—with an adequate *direct* military protection against the overwhelming sea power of Great Britain, Tirpitz fell back upon the idea of safeguarding them *indirectly* by developing the German Navy into a " risk-factor " which, so he hoped, would prevent the war *politically*, which he could not hope to win *militarily*.

This ingenious scheme unfortunately suffered from the fatal drawback that, resting not upon solid military strength but upon a highly questionable and utterly unpredictable psychological assumption, it was not only liable to break down any moment, but, if it should break down, would leave the German Navy in precisely that position of pronounced inferiority, the dangers of which in naval warfare Tirpitz had set out so eloquently and convincingly in his Service Memorandum No. IX. Nor was that all. As Tirpitz—

* Thus in a plan drawn up by Tirpitz in the spring of 1896 for a speech in Reichstag the strength of the German Navy was set at 30 per cent. above that of the French Channel Fleet computed at one-third of the total French forces. Correspondingly the plans of operation worked out by Tirpitz in 1895 foresaw an immediate attack upon that part of the French forces, before the rest would have time to come up.

for obvious reasons—was not able to admit to his collaborators, and possibly not even to himself—the fundamental contradiction with his original strategic ideas contained in his much admired “risk-policy” * the German Navy was not only forced into a position of permanent inferiority running counter to the whole nature of naval warfare—in itself a fatal handicap to the development of sound strategic ideas—but, over and above, was not even given at least the benefit of a clear appreciation of that position, but, on the contrary, misled into a hopeless confusion of ideas by its own highest authority.

The inevitable result was that the German Navy's ideas on strategy were not only thrown into a hopeless confusion but almost completely stunted.† From its original doctrine of the *strategic* offensive the German Navy retained merely the “*tactical* will to battle,” ‡ concentrating all its training and its effort upon preparing itself against the day of a decisive encounter with the British Fleet ; but, as its fundamental policy foredoomed it to a hopeless defensive and precluded it from ever envisaging a strategic offensive, that “decisive battle” became to the German Navy practically the ultimate end of all its ideas and aspirations, an “end in itself.” In theory indeed the German Navy paid lip service to a vague idea of “command of the sea” to which victory in such a decisive encounter should lead ; but that “command,” in a misconception of Mahan's ideas that has persisted to this very day, was conceived as a state of purely military supremacy, parallel to that acquired by an army on land, and not as the indispensable presupposition and means to the real and ultimate objective of war at sea—the control of communications. Because it attributed this same erroneous conception of naval warfare as a struggle for “military supremacy on the sea” to the British Navy, the German Navy was firmly convinced that the Grand Fleet would not fail upon the outbreak of hostilities to bring its “brutal superiority” to bear and come forth into the Heligoland Bight to offer it battle.

When in the years immediately preceding the World War the German naval authorities began more and more to suspect that the

* Publishing in 1926 in “Nauticus” the Service Memorandum No. IX—or rather judiciously selected parts of it—to prove that the German Navy had not been devoid of offensive spirit Tirpitz expressly claimed that it had formed the basis of his Naval Laws.

† In post-war period German naval critics have attempted to explain this stunting of German naval strategy in the pre-war period by external factors such as the lack of previous experience of naval warfare and the rapidity of the German Navy's development, which, so they claimed, forced the concentration of all attention upon the technical and tactical issues and left no time nor force for the consideration of strategical problems. Undoubtedly these external factors contributed to hinder the development of a proper strategic doctrine in the pre-war German Navy ; but recognition of this should not obscure the fact that the fundamental reason for the atrophy of strategic thought in the German Navy before the war was the state of permanent inferiority in which the Tirpitz “risk-policy” placed the German Navy *vis-à-vis* its British opponent making all reasonable strategic considerations out of the question.

‡ In his memoirs Tirpitz opposes significantly enough the “Political defensive” of the “risk-policy” to the “tactical will to battle” contained in it. Strategy falls between these two stools. . . . In the introduction to the publication of the Service Memorandum No. IX, on the other hand, he avoids all references to either strategy or tactics and contents himself with affirming that “the military development was based upon a spirit of offensive. That spirit formed the military basis of the First Naval Law” (*sic*). “Nauticus,” 1926, p. 187.

Grand Fleet would not be inclined to play into their hands and prefer to blockade them from Scapa Flow, they were so incapable of adjusting themselves to this new situation that they continued to hope against hope that it would not arise.*

THE WORLD WAR.

The failure of the Grand Fleet at the outbreak of hostilities to appear in the Heligoland Bight and offer itself to the German High Sea Fleet's counterstroke upset at one blow the whole of the German Navy's strategy and disclosed the fundamental fallacy in Tirpitz's policy. Waiting in vain in tense suspense in its estuaries for the enemy to come and cross swords with it, the German Navy missed whatever advantages it might have secured by a determined attack against the transport of the British Expeditionary Force across the Channel in the first weeks of the War, to awake gradually to a situation for which it was completely unprepared, both materially and psychologically. Pent up in the innermost corner of the North Sea it found the battle, for which it had been training for nearly two decades, out of its reach and its opponent, from his far-off base at Scapa Flow, able to cut all its communications with perfect impunity while itself was unable to strike a single effective blow for its defence, far less in its turn to attack its opponent's communications. Built for a battle within a radius of some 100 miles around Heligoland the German Fleet was even technically incapable of seeking out the Grand Fleet in its own waters, even if its inferiority, both in numbers and position, had not precluded it from challenging effectively the command exercised by the latter.

All that its leaders felt they could do under these circumstances was to attempt to lure their opponent to expose his forces in detail by "tip and run" raids against the British East Coast. As these, however, had to rely for their effect not upon the threat to vital British communications, but merely upon the moral pressure exerted thereby upon the government, they did not prove very effective, and when at last the raid of May 30, 1916, against the trade route running through the Skager Rak brought Admiral von Scheer face to face, not with parts but with the *whole* of the Grand Fleet, he was fortunate enough to be able to extricate himself by his skill and the brilliant training of his force from that not very pleasant situation. The result was that the German Navy, convincing itself of its inability to break the British "command" in battle, began to place all its hopes instead upon undermining it by unrestricted submarine warfare. From the autumn of 1916 onwards, therefore, the German battle-fleet fell back more and more into the role of a support for the submarine promoted to the position of the decisive weapon, with the result that its spirit, already badly shaken by the frustration of all its hopes as well as by long inactivity, began to disintegrate more

* See for this point the memorandum of May, 1914, quoted and criticised by Admiral Groos in the first volume of "The War in the North Sea." When Tirpitz, who was with the fleet on its cruise in the summer of that year, asked Admiral von Ingenohl, the Commander-in-Chief, "And what, if the English should not come after all?" the latter had no answer; but neither had Tirpitz himself!

and more until the flame of open revolt broke out and precipitated the general breakdown that ended with the German Fleet's surrender.

THE POST-WAR ERA: THE OFFICIAL VIEW.

This tragic discrepancy between the high hopes and aspirations with which the German Navy had been built and its inability to alter the helpless strategic position in which it found itself during the War could not but set those who had devoted their lives to it thinking. Again, however, the wholesome though bitter lessons, which might have emerged from a candid recognition of the fundamental reasons for that failure, were suppressed and distorted by the intensive propaganda by which Tirpitz strove, with astonishing success, to obscure the fact that his whole policy, based upon a series of misapprehensions and miscalculations, had been completely discredited by events. In the face of the overwhelming weight of the whole evidence available he asserted that his "risk-policy" had been on the eve of success when Bethmann's bungling of the situation in July, 1914, had given the British their "last chance"; and that strategically the German Navy's chances of victory had been thrown away by the Kaiser's and Bethmann's reluctance to risk the fleet, and the lack of initiative on the part of the various commanders and other authorities in letting themselves be fettered by their orders. The former claim was the very reverse of the truth, and the latter substituted subsidiary factors for the real issue; but the German Navy in the bitterness of defeat was only too glad to convince itself that its fundamental policy had been right and that it had only been deprived of the success deserved by the errors and the timidity of the civilian authorities. Practically the whole of German naval opinion fell promptly into line with this view, which to this day dominates the German Navy's outlook despite the change in recent years in its strategic outlook. Above all, the tendency to demonstrate the correctness of that view involuntarily dominated and coloured the Official History of the War.

The officer entrusted with the crucial section on "The War in the North Sea," Commander (now Admiral) Groos, was an unusually broadminded and well instructed naval theorist. In later years he achieved great merit by introducing first Corbett, curiously enough almost completely ignored before the War, and later Admiral Castex to the German Navy, and he exercised a most salutary stabilising influence as the outstanding authority on questions of naval strategy. But, unfortunately, he was also an ardent admirer of Tirpitz and always inclined to let himself be swayed in his judgments by the latter's contentions. Thus the "War in the North Sea" presents a curiously contradictory spectacle. On the one hand Admiral Groos started by freely admitting that the German Navy had failed to understand that the essence of naval strategy lay in the fact that it was not a struggle for "military supremacy" as an end in itself, but for the ultimate aim of "control of communications"; and he strongly criticised the German commanders' failure to realise the significance of the decisive fact that Great Britain "by her geographical

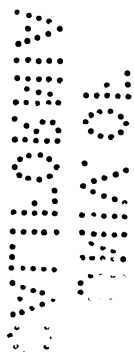


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position alone " was able to cut Germany off from all her trans-Atlantic communications. But the recognition of this fact did not lead him on to a fundamental re-examination in its light of the soundness of Tirpitz's policy or the strategy of the German Naval Command in the World War. Instead, after having mentioned this fundamental weakness of the German position he quietly dropped this decisive issue without examining whether and how the German Navy could have tried to effect it ; and for the rest of his critical analysis he treated the problem facing the German naval commanders as if it had merely consisted in the problem of bringing its opponent to battle and not in the practically hopeless proposition of wresting from him the " command " against a vast superiority both in numbers and in position.

On the other hand, Groos did not minimise the great superiority which they had to face and, therefore, rightly maintained that the only way in which the German High Sea Fleet might conceivably have wrested " command of the sea " from the Grand Fleet would have been a *series* of victories over sections of it, in contrast to Tirpitz, Wegener, and others, who boldly proclaimed its capacity to achieve a victory over the whole united force of the Grand Fleet. This contradiction between his apologetic tendencies and his better insight is curiously reflected in his " Seekriegslehren " in the fact that he discusses the German strategy in the World War not once, but twice, under mutually exclusive headings ; *wrongly* as the problem of " acquiring command by battle," *rightly* as that of disputing it by a " fleet in being."

ADMIRAL WEGENER'S "NAVAL STRATEGY OF THE WORLD WAR."

This reluctance of German naval opinion to face squarely the central issue of the war in the North Sea—the fact that the German Navy with all its activity had completely failed to affect the stranglehold of the British blockade that was slowly choking Germany to death—did not remain, however, without opposition. In 1926 Vice-Admiral Wegener (retired) in a memorandum at first distributed privately amongst a number of elder officers, but three years later made generally accessible in book form under the title " The Naval Strategy of the World War," put forward a trenchant criticism of German naval strategy during that conflict as well as against its subsequent interpretation, that was to exercise the most profound influence upon the whole further development of German naval thought.

Admiral Wegener started his study by hammering into his readers' minds the fundamental difference between the British position at Scapa Flow, controlling and covering all the trade routes of the seven seas, and the German position in the innermost corner of the Heligoland Bight, controlling no trade route whatsoever. In these circumstances, he claimed, the persistent endeavour of the successive German Naval Commanders to bring about a decision in the " strategically dead " North Sea had been the attempt, hopeless from the

outset, to bring about a battle, where the German Fleet could neither enforce it nor utilise it. German naval strategy in the World War had unconsciously been fatally vitiated by the influence of Tirpitz's "risk-theory" which by its defensive formulation had blinded the eyes of the German Navy to the fact that it could only hope to achieve its mission—the maintenance of Germany's vital overseas communications—by taking the offensive and wresting the "command" from the Grand Fleet. The proper strategy for it would, therefore, have been to create equality of strategic position with the Grand Fleet by a "geographical offensive" that should have carried the German Fleet through the Danish Sound to the control of the Kattegat and to a position at Skagen at the tip of the Jutland peninsula, and from there to the S.W. coast of Norway. From there the German Fleet would have been able to roll up or at least to force back the British line of blockade and thus to bring about a decisive battle for the real issue of the War.

This bold indictment, advanced with impressive assurance, contained a curious mixture of truth and error. By placing the real issue in the centre of the discussion and insisting that the naval strategy of the World War should be judged with reference to it and not to what the German Commanders had believed in or hoped for, Admiral Wegener undoubtedly rendered German naval thought an outstanding service. It was most significant that such candid recognition of the real problem should have immediately led him beyond the faulty dispositions of 1914 to the contradiction inherent in Tirpitz's "risk-theory" as the ultimate root of the trouble. There, however, he stopped. He realised clearly how the strategic outlook of the German Navy had been stunted before the War by the defensive cant of the "risk-theory" and its fundamental contradiction of the true nature of naval warfare; but he saw in it merely a strategic misunderstanding and not the reflex of the far more fundamental viciousness of the German Navy's material position that resulted from it. Elated by his discovery he completely ignored that, to assume the strategic offensive and successfully to dispute the control of communications, a correct appreciation of their cardinal importance in naval warfare was not enough but that a substantial material superiority—Tirpitz's one-third—was indispensable. Thus, instead of realising that the fundamental mistake in Tirpitz's policy had lain in directing the German Navy's reconstruction against the overwhelming power of Great Britain, and the German Navy's difficulties in the World War *primarily* in its numerical inferiority and only *additionally* in the confusion of ideas caused by the cant of the risk-policy, he attributed everything to the latter alone. He thus arrived at the curiously inconsistent attitude of whole-heartedly endorsing Tirpitz's fundamental policy while at the same time blaming him for having given it the form and objective by which alone, if at all, it could have succeeded, and for having failed to have given it an aim—the control of communications—which Tirpitz could not possibly have envisaged.

This lack of a truly clear understanding profoundly vitiated Wegener's otherwise brilliant and stimulating criticism of German

naval strategy during the war. Inclined to attribute to strategic dispositions an importance out of all proportion to their possible significance, he came to an over-optimistic view of the chances of the German Fleet in the War as well as to a fatal over-emphasis upon the importance of strategical positions as compared with material forces. The advance of the German Fleet to the S.W. coast of Norway suggested by him—provided always that it could have been carried through at all—would have been able to do very little to improve the fundamental weakness of the German Fleet's position. All that it would have achieved with certainty would have been to bring about the battle which the German commanders had sought so long in vain in the North Sea ; but not the battle they were striving for, with isolated sections of the British forces, but the battle which even the most enterprising of them, Scheer, had wished to avoid, the battle with the whole concentrated might of the Grand Fleet. In fact, by precipitating such an action it would actually have destroyed the one slender chance of the German commanders of beating their opponents in detail, while, once the issue had been joined, the better strategic position of the German Fleet would have been unable to add anything to its chances of a tactical victory. Wegener's claim finally that a victory won by the German Fleet off the coast of Norway would have had a strategic significance, whereas one achieved in the "strategically dead" North Sea would have had none, was simple nonsense ; Admiral Groos pointed out with perfect justification that, if the German High Sea Fleet had succeeded in winning a decisive victory over the Grand Fleet, it would have mattered nothing where the battle had taken place.

It is, however, understandable that this sovereign disregard of the realities of the situation by Admiral Wegener earned him much sharp criticism on the part of many elder officers, but also the enthusiastic admiration and support of the younger men. The immense influence which his study was to exercise on the development of German naval ideas can only be understood if one realises the immense emotional appeal which his optimistic presentation of the German Navy's lost chances in the World War, and his clarion call to a second and better advised attempt, exercised upon the future leaders of the German Navy. To these young men, groping desperately for an idea in the light of which they could reconstruct German sea power, his emphasis upon the "control of communications" as the true goal and sole aim of naval warfare came with the force of an absolute revelation* ; but one can well doubt whether its effect would have been so overwhelming if Wegener's criticism of Tirpitz's policy had been more radical and his picture of Germany's chances during the War less optimistic and enthusiastically inspiring.

* "It is an honourable duty to attest that Vice-Admiral Wegener has been responsible for giving the inspiration to naval strategic thought in the higher sense in which at the moment a great part of the officers is already eagerly taking part." Captain Claussen, "Vom Wesen der Seestrategie," *Marine Rundschau*, 1927, p. 446.

"It must be clearly expressed that these articles constitute pioneer work in the sense of preparing the way for an intellectual activity, which before the World War had been greatly underrated and, in consequence, crippled." Commander Grassmann, "Vom Wesen der Seestrategie," *Marine Rundschau*, 1927, p. 337.

In the crop of articles inspired in the following years by his study, in which a number of these younger men attempted to develop in his wake a new understanding of naval strategy, * this emotional appeal is very clearly apparent and the disregard of realities, with which they fought the World War over again to a better end, even more grotesquely exaggerated.

Incomparably more serious than these youthful ebullitions—which as far as necessary immediately found their correction—was the danger of a fundamental misunderstanding contained in Wegener's theories. As it appeared in his discussion of the naval strategy of the World War the newly discovered ultimate aim of naval warfare—the control of the vital communications—did not affect, but, on the contrary, tended still further to reinforce the traditional objective, "command of the sea." "Command of the sea" ceased to be an end in itself—in the sense of a "strategically empty" purely military supremacy, in which it had been erroneously envisaged by the German Navy before and during the World War—but it retained its full significance as the indispensable preliminary and means to an effective achievement of that ultimate aim. This fact, however, had not explicitly been set out by Wegener, with the result that the door was opened to the possibility that, in the absence of a fully developed theory, the end might so far overshadow the means that the latter's vital role might be overlooked and "control of communications" conceived as something possibly independent of, or even opposed to, "command of the sea." In these first articles based upon Wegener's study that danger was as yet hardly more than a shadow, but that it was perceptible even at that moment to an intelligent officer, is shown by the critical observations with which Commander Walter Neumann accompanied Grassmann's article on the "Essence of Naval Strategy." Commenting upon the three "tasks" enumerated by the latter—the cutting of the enemy's communications, the maintenance of one's own communications, and the protection of the coasts—he pointed out that the author had completely omitted the first and fundamental task of every naval commander—measures aiming at the destruction or control of the enemy's armed forces. "That this task is not being purposely excluded can perhaps be inferred from the author's later observations," he goes on, "clearly and unmistakably, however, it has not been set out by him. If one confines oneself to a verbal interpretation of the three points enumerated by him, the danger is imminent that one might fall into the error of a tendency long prevalent in France, the adherents of which aimed at achieving the ends of naval warfare by the fulfilment of its subsidiary tasks with the result that the French Navy in its material and training became incapable of achieving its main objective."

With remarkable foresight Commander Neumann had in this

* Captain Claussen, "Ueber Seepolitik und Seestrategie," *Marine Rundschau*, 1926, p. 81, with observations and criticisms by Admiral Hollweg (retired) in the same volume, p. 404, and Commander Grassmann, "Vom Wesen der Seestrategie," *Marine Rundschau*, 1927, p. 337, with observations and criticisms by Captain Claussen, p. 444, and Commander Walter Neumann (retired), p. 446.

passage laid his finger upon the very spot whence the "revolution in German naval thought" was to take its source. For the time being the movement brought into German naval ideas by Wegener's study, however, stopped there. In 1928 Admiral Groos reassembled in his "Seekriegslehren" the ideas developed by him in the writing of the Official History in a framework taken over from Corbett's "Principles of Maritime Strategy," and for the next eight years by his authority, backed by that of Castex, whose monumental "Theories Strategiques" appearing from 1928 to 1935, introduced to the German Navy in a long series of articles in the *Marine Rundschau*, kept German naval thought on the safe, if somewhat eclectic, lines of a sober, common-sense evolution of Mahan's and Corbett's classical doctrines.

THE NEW NAVAL DOCTRINE.

The revolution in German naval thought started by Wegener's study came to a head in the first years of the Nazi regime when the resurrection of the German Navy made the development of a suitable strategic conception for its guidance imperative.

This new strategy, which from 1935-6 onwards rapidly conquered and dominated practically the whole of German naval thought, found its extreme—and hence its clearest and most consistent—expression in the study which for the first time presented it to a wider public, Captain von Waldeyer-Hartz's article on "Naval Warfare of To-morrow."* In this study the dissociation of the new aim of "control of communications" from the traditional method of seeking "command of the sea," the first almost imperceptible traces of which we found above with Wegener's first adherents, had been developed to its utmost. Captain von Waldeyer-Hartz no longer tacitly overlooked the decisive role played by "command of the sea" in the struggle for "control of communications," but, erroneously identifying it with that conception of naval warfare as a purely military struggle which had vitiated the German Navy's thoughts before and during the World War, rejected it as out of date, and proclaimed in its stead the new naval strategy of to-morrow, which should aim directly at the defence and attack of trade without the intermediary step of the struggle for a "general command."

"The naval strategist of the future," he said, "is no longer going to make his plans of operations dependent upon purely military considerations; he is going, on the contrary, to place himself and the forces under his command in the first place in the service of economic warfare. If that opinion should prove correct—and there are many signs for it—then trade warfare will be the dominant form of the naval warfare of tomorrow." And again, "The Blue-water School of to-day is completely different from that of the sailing-ship era. The latter saw its ultimate military objectives in the seeking out and destruction of its opponent's armed forces, the attack and defence of trade fell under the heading of subsidiary operations. In future the roles will be changed. The armed forces afloat are going to be

* "Wissen und Wehr," 1936, p. 183.

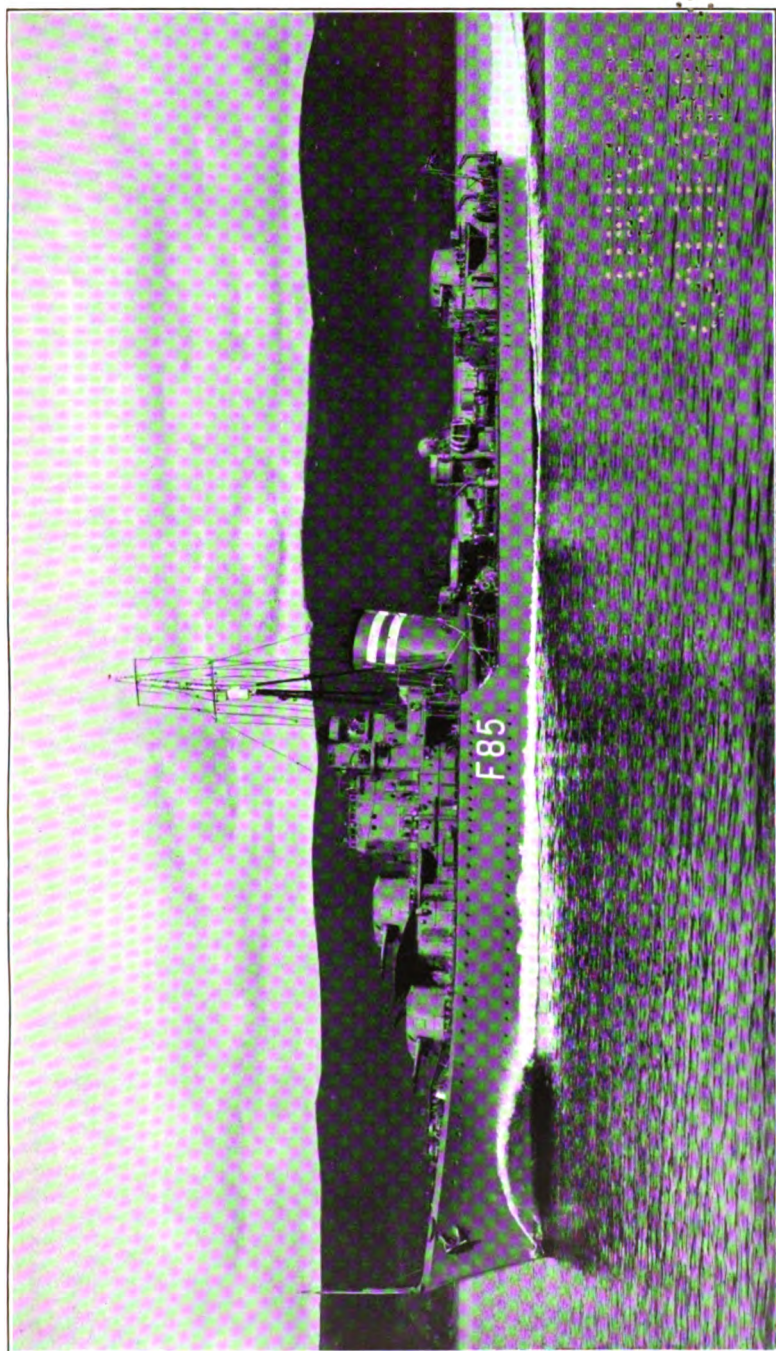
utilised for the intimidation and control of the neutrals ; the whole strategy will be directed upon the objective of immobilising, or better still, destroying the merchant shipping under the enemy's flag, with the utmost consideration for one's own armed forces ; operations are no longer going to be directed upon the enemy's armed forces, but against his economic resources ; in one word, battles and combats at sea are going to be merely the consequences of trade warfare, whereas formerly—to quote only Aboukir and Trafalgar—they constituted the end of all strategic measures. Blue-water School of to-day means trade warfare, trade warfare in its extreme form."

"Attack upon the enemy's trade and protection for our own trade, those are the decisive tasks to which everything else is going to be subordinated. The result will inevitably be a wide dispersal of naval forces." And summing up, "Because of the wide dispersal of merchant shipping naval warfare is going to take place on all the seven seas simultaneously, most violently at those points where sea trade is most strongly concentrated."

"The distinction between merchantman and man-of-war is going to disappear. Both of them are going to be fighters, attackers and defenders alike." The designation of this new conception of naval warfare by Dr. Kruse as revolutionary is, if possible, an understatement. What Captain von Waldeyer-Hartz presents here under the disguise of a mythical British "New Blue-water School" is nothing more or less than the conscious repudiation of the tradition of four centuries of naval warfare brought into a rational form by men like Mahan and Corbett. The central issue of that warfare, the struggle for the "command of the sea," had been a measure of defence and offence alike ; the elimination of the enemy's main forces from the sea by battle or blockade had formed the surest—in fact, the only sure—measure against an invasion, just as it constituted the pivot for the whole complicated system of trade defence and the basis for a diversion of the enemy's forces by combined operations or large-scale maritime wars.

This cardinal function of the "command of the sea" in naval defence was completely overlooked by the new German school of naval strategy, which, erroneously identifying the quest for the "command" with a *military* offensive against the enemy's armed forces, believed that naval warfare could in future be conducted, without such "military strategy" altogether, as "mutual trade warfare" in the form of attack and defence of convoys.*

* That an understanding of that *defensive* function of the "command of the sea" was not wholly lacking in Germany is shown by the article of Rear-Admiral Donner (retired) on "Offensive Defensive in der englischen Seestrategie" in the same volume of "Wissen und Wehr," 1926, p. 676, in which had appeared Waldeyer-Hartz's article. In this study Admiral Donner gave a very clear appreciation of the role played by the "command of the sea" in British defence against both invasion and attack on merchant shipping, remarking on the latter point : "For non-selfsufficient countries bordering on the sea the maintenance of their overseas imports will normally constitute a life and death problem. In that case the mere coastal defence proves wholly insufficient as the sea itself remains beyond its reach, lies open to enemy action and becomes unpassable. Such defence of trade can therefore in the last resort be satisfactorily assured only by offensive action. The defensive system of trade protection by convoys can in certain circumstances prove sufficient over a considerable period, but is hopelessly inadequate against an opponent full of initiative. . . . If it has succeeded during the



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Running trials before acceptance.

(By courtesy of the builders, Messrs. Yarrow & Co.)

The German Navy, however, accepted this revolutionary doctrine without hesitation or question, so eminently did it seem to fit its peculiar position. By the naval agreement with Great Britain of June, 1935, the overwhelming opponent, the superiority of which she had had to recognise during the World War, appeared to have been eliminated for ever. With the Anglo-German rivalry of pre-war days removed by Germany's acceptance of a 35 per cent. standard every possible source of friction was claimed to have been removed and a naval conflict between the two nations to be henceforth out of the question. With that contingency apparently removed there remained then as practical propositions a struggle with either France or Russia, or more likely a coalition of the two. Against Russia alone the German Navy would probably have been able to secure the "command of the sea" in the Baltic; against France, or France and Russia allied, her forces were obviously not adequate to that task. On the other hand, thanks to the screen offered by a supposedly neutral Great Britain, she could hope to maintain her vital trans-Atlantic communications by convoying her merchantmen through the North Sea into the open Atlantic and beyond. Admiral Castex himself confirmed this from the French side.*

THE VOLTEFACE AGAINST GREAT BRITAIN : CRUISER WARFARE.

This pleasant dream was rudely broken, and the special character of the strategic doctrine, upon which the German Navy had based itself, was painfully recalled to her when, after Munich, the impossible threatened to become true after all and Hitler's policy threatened to range Great Britain against him. That the British Fleet would not be satisfied with that form of "mutual trade warfare" ascribed by Waldeyer-Hartz to its "New Blue-water School" was too self-evident to need any elaboration. Before its mighty shadow the German Navy's dream of achieving this time, what she had failed to do during the World War, the maintenance of Germany's oversea communications, disappeared overnight almost without a word.† All the more eagerly did attention concentrate upon the offensive aspect, for here the change from a strategy aiming at a battle with the enemy's armed forces, as in the World War, to the new strategy of "trade warfare," seemed to hold out prospects promising generous compensation. In the World War the German Navy had committed a fundamental mistake by keeping its gaze, as if hypnotised, upon the Grand Fleet, striving in vain to wrest from that fleet the

World War against the submarine, it was only able to do so, because the British Main Fleet kept its opponent's main forces away from the lines of communication."

As these remarkably clear observations ran, however, against the whole trend of contemporary German naval thought, they have remained without any effect and it has been left to a foreign naval authority, Admiral Castex, to give Admiral Donner's articles the praise and credit due to them.

* "Théories Stratégiques, Vol. I., Nouvelle Edition, p. 121.

† The only reference to this defensive aspect of German naval strategy in the case of a conflict with Great Britain is the laconic observation by Admiral Prentzel: "A hostile attitude on the part of England would confront our naval strategy in the North Sea with very difficult tasks." Article "Kriegsmarine" in "Die Deutsche Wehrmacht, 1914-39," edited by General Wetzell.

"command" which in the nature of things it could not possibly hope to win. That mistake would not be repeated again. By avoiding, as far as possible, clashes with the British armed forces and concentrating instead the full strength of her attack—submarine, aerial, and surface—against her merchantmen she would strike not against superior strength but weakness, and fight not for an illusory military advantage, but for the real aim of naval warfare, the "control of communications."

This plan of campaign, although arrived at in a curiously devious manner, was certainly the best the German Navy could devise under the circumstances and it was not without some promise of success. In the past, the system of naval defence based upon the blockade of the enemy's main forces had tacitly rested upon the assumption that the enemy forces which inevitably would be able to avoid even the closest of such controls would not be superior, individually or collectively, to the relatively weak forces acting as patrols or as direct protection of convoys behind the screen formed by their own main battle fleet. Whenever in the course of the Anglo-French naval wars the French Navy had sent out upon cruiser warfare whole squadrons of ships-of-the-line instead of the usual swarm of privateers and frigates, the difficulties of dealing with them had been great. If the German Navy instead of, as in 1914, letting its larger units be immobilised in the North Sea by the British Main Fleet, this time directed them instead against the relatively weak escort forces, she would in effect circumvent the whole traditional system of defence and could hope not merely to inflict considerable material damage, but above all to create a very considerable distraction of military effort. In the World War her submarine attack had broken down in the last resort, because the submarines, left to struggle alone, were defeated by the weak convoy escorts. Now a combination of submarine and surface attack promised a better success. Forcing the shipping into convoys the submarines would thereby offer to the surface raiders ideal targets to swoop down upon.

In her three so-called "pocket battleships" German naval experts claimed she possessed the ideal instruments for such super-cruiser warfare. In a remarkably frank article on escort vessels published in the "Militär-Wochenblatt" in November, 1938, Vice-Admiral Meurer (retired) noted with satisfaction that although the building of large numbers of escort vessels by Great Britain showed clearly that she was anticipating not only submarine but, above all, surface attack, "nothing substantial had as yet been done in England (and equally in France) for the protection of oceanic convoys." Discussing the cruiser forces available as well as the plans for a strongly armoured and relatively slow type of 8,000-ton escort cruiser, he came to the conclusion that they all were insufficient to afford protection to "oceanic convoys" against "large commerce destroyers."

"Against heavy cruisers with 8-in. guns, and still less against armoured ships of the 'Deutschland' type, such escort cruisers would indeed not be of any great avail. If such dangers had to be faced,

older battleships, as in the case of the Norwegian convoys during the World War in 1918, would have to take over the protection. It is, therefore, not only a very important, but a very difficult, question that is being raised thereby; a question which has in no way been solved as yet despite the fact that it affects the whole strategy of naval warfare. The less one will have to reckon in future with the clash of large battle fleets as in 1916 at Jutland, the more trade warfare is going to become the main operative task of the strategy of naval war."

CONCLUSION.

Under the influence of the contradiction with which it was infected by Tirpitz's ill-advised policy the German Navy has to this day failed to arrive at a truly sound theory of naval warfare. The reluctance to carry through the radical criticism necessary to clear the ground in this respect, together with a certain predilection for mere abstract reasoning and a misconception of British naval history as well as of its great interpreters, Mahan and Corbett, has vitiated the very notable effort made after the World War to arrive at a better appreciation of the true nature of naval warfare, with the result that German naval thought has swung almost as far away to the other extreme as in her pre-war conception of naval warfare as a purely military struggle.

How far this weakness of her theory may have affected the German Navy's conduct of the present operations it is at this moment impossible to tell. It is, however, significant that her well-laid plans have so far not been carried into practice. Above all, the wholesale attack upon the Allied convoys, that was to have been the centre-piece of her whole strategy, has so far completely failed to materialise. Two of her "pocket battleships" have indeed succeeded in getting into the open Atlantic, but their activities have been wholly confined to ordinary cruiser warfare against isolated merchantmen and their results in consequence very small. The Graf Spee kept well out of the track of convoys and, if interviews that have appeared in the South American Press are to be trusted, was actually under order not to engage any convoy escorted by more than two destroyers. Is it conceivable that that mysterious factor "command of the sea," for which German naval thought has professed so much contempt in recent years, may have proved an incomparably more impressive force in reality than on paper, and may have contributed to create that feeling of inferiority which in the past has cramped so many hopeful projects of a numerically inferior navy?

H. ROSINSKI.

CHAPTER VI.

THE SUBMARINE CAMPAIGN.

I.—THE U-BOAT OFFENSIVE.

THE outstanding feature of the first four months of the war, up to the end of 1939, was—as it was in the war at sea in 1914–18—the intensive German submarine campaign directed mainly against Great Britain : in fact the U-boat was the only part of the vast Nazi war machine which came fully into action.

No matter what other mistake Herr Hitler and the Nazis made, there is little doubt that, though they underestimated it, they had a better appreciation of British sea power, and its effects on their overseas supplies, than had the Kaiser's regime of 1914–18. But their available means of combating this menace to their supplies was much less than in the Great War.

The British Navy, at the outbreak of hostilities, was far stronger than Germany's—except in the number of submarines—and the British and French Navies, combined, were overwhelmingly superior in all classes. The strength of the British, French, and German Fleets was :—

	British.	French.	Total.	German.
Battleships ...	12	5	17	3*
Battle cruisers ...	3	2	5	2
Aircraft carriers ...	7	1	8	—
Cruisers ...	60	51	111	8
Destroyers ...	180	38	218	34
Submarines ...	58	78	136	71
Totals ...	320	175	495	118

* " Pocket battleships " of only 10,000 tons.

With no battleships proper, only two battle cruisers—both greatly inferior to ours—and three so-called " pocket battleships "—actually freak armoured cruisers with 11-in. guns—no fleet action was possible. In fact any offensive action against Allied warships, other than by an isolated raider or by submarines, was almost out of the question.

But since warships are faster than submarines, and are armed and able to retaliate, they were not such good prey as merchant ships—especially as all the latter at sea when war broke out were not yet defensively armed. For this reason and as a counter to our blockade, the Nazis decided to attack Allied merchant shipping in the distant seas with their " pocket battleships " as raiders ; in the Atlantic and around our coasts with submarines ; and in the North Sea with aircraft.

BIRTH OF U-BOAT FLOTILLAS.

Under the Versailles Peace Treaty Germany was forbidden to build or acquire submarines. But on March 16, 1935, in a broadcast from the Berlin Stadium, Hitler repudiated the Treaty's disarmament clauses. By April 9 it was known that Germany had ordered twelve coastal submarines of 250 tons each, and altogether twenty of these vessels were laid down at Kiel that year, as well as two ocean-going vessels of 712 tons. By the end of December all but three of the coastal craft had been launched, and thirteen were actually completed during 1935.

Fourteen U-boats were laid down in 1936 and in the three years afterwards sixty-three. The number built and building at the outbreak of war was as follows :—

Tonnage.				Built.	Building.	Total.
<i>Ocean-going</i>						
710-740	...	...	...	15	11	26
<i>Sea-going</i>						
500-517	...	...	...	24	17	41
<i>Coastal</i>						
250	...	...	...	32	—	32
				71	28	99
<i>Ordered by Yugoslavia</i>						
280...	...	...	...	—	2	2
					Total ...	101

Of the seventy-one understood to be completed, only thirty-nine were considered capable of operating outside home waters. The other thirty-two boats of 250 tons were primarily designed for short distance operations in the Baltic.

The number of German submarines in September, 1939, therefore, was more than twice that of August, 1914 (28), when the full capabilities of submarines had not been realised, but it was only half that of early 1917 (138) when the unrestricted "sink at sight" campaign was launched. This campaign for a period destroyed our merchant ships faster than we could replace them, at a time when Germany was building submarines faster than they could be destroyed, and brought us within measurable distance of defeat.

Hitler's success with submarines depended, as did his success in other spheres, on a lightning campaign. Some days before the declaration of war by Great Britain, therefore, U-boats had been sent hundreds of miles from German ports, and stationed at the strategic points of the trade routes.

Germany in 1936 had voluntarily agreed to the Submarine Protocol, which had formed Part IV of the London Naval Treaty of 1930, to refrain from "unrestricted submarine warfare." She accepted, as an established part of International Law, that submarines must conform to the rules to which surface vessels are subject, and may not sink or incapacitate a merchant vessel—unless she has offered resistance or refused to stop—without having first placed the

passengers and the crew in a place of safety. For this purpose the ship's boats are not regarded as a place of safety.

"SINK AT SIGHT" POLICY ADOPTED.

In less than twelve hours of war, the value of Germany's signature to this agreement was put to the test. The torpedoing of the *Athenia* 250 miles north-west of Ireland on the night of September 3 virtually opened the war. This attack, without warning, on a defenceless Donaldson liner with 1,400 passengers and crew on board, resulted in the loss of over a hundred lives and profoundly shocked the world. In some quarters this unwarranted action was considered to have been due to the U-boat captain losing his head and assuming the vessel to be an armed merchant cruiser commissioned for the Navy. Further similar attacks without warning, and with no opportunity for the crew and passengers to seek safety, showed that Germany had literally torn up her treaty obligations and was waging a ruthless "sink at sight" campaign as in the worst period of 1917-18.

Our problem was the world-wide range of seaborne trade to be protected. British shipping at the end of June, 1939, totalled 8,977 vessels of 21,001,925 gross tonnage,* and with some 2,500 daily on the seven seas a number of slow speed fell easy victims to the U-boat depredations.

In the first week of the war eleven British ships of 64,000 tons were sunk. In the second week the figures rose to sixteen ships and 67,000 tons. This was the highest British weekly loss for the seventeen weeks of 1939, but it was only half of the average weekly losses in April, 1917—the peak period of the Great War. In the third week the losses fell to seven ships and 14,000 tons, and in the fourth week to three ships and 10,000 tons. This gave a total of thirty-seven ships and 155,000 tons lost from all causes during the first month, as compared with one hundred and sixty-nine ships and 516,394 tons in April, 1917.

The neutral losses, however, for September were fourteen ships of 34,283 tons.

The first naval loss from submarine attack also occurred in September (17th) with the torpedoing of the aircraft carrier *Courageous*.

Most of our merchant ships attacked had started their voyages before war broke out, and had not, therefore, come within the full scope of the defensive arrangements. In the first three weeks the losses were mainly due to submarine action. Surface attack was carried out when possible, an attempt invariably being made to disable the ship's wireless by gunfire. Nine ships were sunk by gunfire and at least three with torpedoes, but the nature of the other attacks was not disclosed at the time.

The ships sunk included : one passenger liner, three cargo liners, five tankers, and nineteen cargo tramps ; and all except the liner *Athenia* (14 knots) had a speed of under 12½ knots. In this connection it is of interest to note that in the same period at least five

* "Lloyd's Register of Shipping."

ships of 16 knots or over, successfully eluded submarines which attempted to attack them on the surface.

SUCCESSFUL DEFENSIVE MEASURES.

After the third week there was a marked decline in the number of attacks which, in part, may have been due to the necessary relief of the first U-boat patrols, so that they could return to Germany to re-fuel, refit, and rest before setting forth on further forays. There was, moreover, ample evidence that, of those submarines operating around our coasts, some were being hunted away into distant areas, where their menace could not be so great. Of the recent sinkings a number had occurred in the Atlantic Ocean—outside the escort areas. There was no doubt that the defensive-armament measures taken to protect our merchant shipping, the introduction of the convoy system, and the offensive tactics adopted by the Navy—dealt with later in this chapter—had made the waters around the British Isles extremely dangerous for the underwater assassins. In fact, the U-boat menace had been mastered from the start.

At the end of September, a week passed when no British ship was even molested by a German submarine, though U-boats were known to be at sea. No ship had so far been sunk in convoy. Finding that the attack on British shipping was becoming increasingly difficult and dangerous as the counter-measures grew, the Germans changed their tactics and attacked defenceless neutral shipping or humble fishing vessels. Most of these attacks were on the smaller neutrals who were not in a position to retaliate. Finnish, Swedish, Norwegian, Dutch, Belgian, and Greek ships were sunk on the high seas in an indiscriminate and illegal manner and with loss of life. Nevertheless, trade continued to flow to and from our ports in an ever-increasing volume.

NEW THREAT TO SHIPPING.

The Chief of the German Admiralty (Admiral Raeder), in a two-column interview on the front page of the *Deutsche Allgemeine Zeitung* of September 26, assured us that "the U-boat campaign is being conducted strictly in accordance with international rules." He assured us, too, that "there is no question of unrestricted U-boat warfare." He assured us, also, that "Germany is always anxious to take into account the needs of neutrals." Yet only four days later (September 30), realising that the first phase of their ruthless campaign had failed, the Germans announced in a broadcast another and more sinister development of U-boat warfare, namely that "every British merchant ship will in future be regarded as a war-ship" and, therefore, liable to be sunk without warning. The Nazi excuse was that merchant ships had begun to attack submarines, ignoring the fact that the right to arm merchant ships for self-defence was well-established in International Law.

Notwithstanding this new threat the British losses, in the first week of October, were only two ships of 6,000 tons, and in the second week three ships of 18,000 tons. Towards the end of the second

week the U-boat warfare, which had for a fortnight been mainly directed against neutrals, became again intensified. Within two days four ships (including two French) were torpedoed in the Western Approaches, and three others were attacked but escaped. In the third week four ships of 26,800 tons and in the fourth week seven ships of 14,400 tons, were lost, making a total for the four weeks of sixteen ships and 65,200 tons. The total for the complete month was nineteen ships and 83,159 tons—practically only half the September figures. The neutral losses for October were, however, sixteen ships of 41,752 tons—an increase of two ships and 6,469 tons on the figures for the previous month.

A naval loss from submarine attack also occurred in October (14th), when a U-boat sank the battleship *Royal Oak* inside Scapa Flow. This still only brought our warship losses from enemy action up to two in as many months.

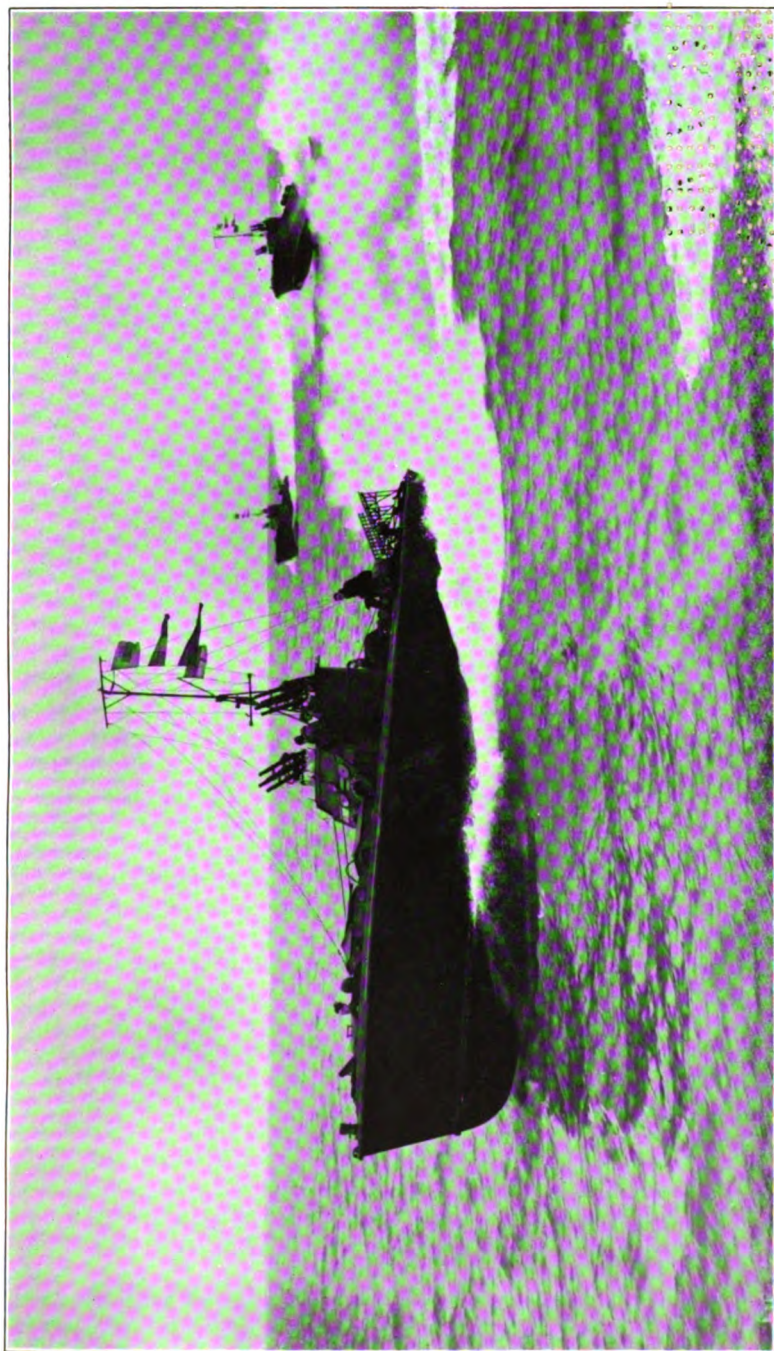
The number of British merchant shipping losses during the first fortnight of November was again low, for in the first week only three ships of 18,000 tons were lost and in the second the numbers were down to one vessel of 961 tons—which sank in the North Sea after an explosion. For the moment it appeared that both the submarine and the mine menace had been mastered completely, but this proved to be only a lull before a violent storm.

INDISCRIMINATE MINELAYING.

A new offensive against British merchant shipping was foreshadowed by a Nazi press campaign launched on November 14, in an attempt to frighten neutrals from travelling in Allied vessels. Baron von Freytag-Loringhoven, leading German jurist and formerly Germany's representative on the Hague Court of International Justice, writing in the *European Review* said: "German U-boats should now torpedo all British ships on the assumption that they are armed." Göring's newspaper, the *National Zeitung*, took up the refrain and threatened that all armed passenger ships would be treated as "pirates."

But direct submarine attacks by gun and torpedo had been largely defeated; so in the middle of November the Nazis began a new phase of indirect attack by mines, fouling the sea highways for belligerents and neutrals alike, contrary both to the tenets of international law and the dictates of humanity. The Chief of the German Admiralty, in answer to questions from the Berlin correspondent of the Dutch paper *Handelsblad* on September 17, had stated that "The laying of minefields will be announced according to the Hague Convention of 1907." Yet from early in the war unannounced German mines of the usual moored contact type had been swept up in British waters, and had drifted ashore on our East Coast. A few merchant ships had suffered damage from them, but no naval vessel was lost until the destroyer *Blanche* struck one on November 13.

Five days later (18th), six merchant ships of 26,200 tons were sunk by mines off the East Coast within twenty-four hours. Five of the six were neutrals. This marked the beginning of a new



BRITISH MOTOR TORPEDO BOATS.

*A division starting out on patrol.
("The Times" photograph.)*

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stage of frightfulness with a type of mine different from the moored one, inasmuch as it could not be swept up by ordinary sweeping methods. It was soon discovered that they were magnetic mines, which exploded when a ship approached, even though she did not hit them.

Meanwhile, to add to this new development, German aircraft for the first time laid magnetic mines at dusk on at least two evenings in several estuaries on the East Coast. One of these mines claimed the destroyer *Gipsy* as a victim on November 21.

In the third week in November, owing to the magnetic mine, the merchant shipping losses rose to nine ships of 20,148 tons, and in the fourth week were thirteen ships of 28,546 tons. The total for the month was twenty-six ships of 67,650 tons, which, compared with the October figures, showed an increase of nearly 50 per cent. in ships but a decrease of one-fifth in tonnage. The neutral ships lost during November were fifteen vessels of 103,578 tons—one ship less than in October, but twice as much tonnage.

The only naval losses during the month—and all victims of minelaying—were two destroyers and two trawler minesweepers. A trawler was also reported as missing.

On November 28 the first authoritative explanation of German aims and methods since the latest phase of the war on shipping began, was made by a German official in Berlin to the Amsterdam *Telegraaf*. "Germany," he said, "must resist the British blockade with all means at her disposal—with U-boats, mines, aeroplanes. This resistance would continue until no British or neutral ship dared enter or leave a British port."

As with all new developments of war, the initiator obtained temporary advantage, but with the early introduction of counter-measures for the magnetic mine—the R.A.F. security patrol over the Heligoland Bight against enemy minelaying aircraft, the taking up of a large number of trawlers and other craft as minesweepers, and the use of alternative routes by shipping—the losses fell again in December. A further measure was the decision on December 26 to lay a British minefield right down the East Coast from Moray Firth to the Thames Estuary, to protect shipping from submarine attack and prevent enemy minelaying in the fairways.

In the first week the British merchant shipping losses were six ships of 29,539 tons ; in the second, six of 23,432 tons ; in the third, six of 22,727 ; in the fourth, ten of 6,581 ; and in the fifth they numbered only three British vessels of 3,056 tons and two neutrals of 1,643 tons. The British losses for the five weeks in December were thirty-one ships of 85,335 tons. This was an increase of one-fifth in ships but only one-fourth in tonnage on the November figures.

In the four months the total British losses from German hostile action were one hundred and thirteen ships of 391,144 tons. This represented only 2 per cent. of our total tonnage. Against this could be set the vessels captured from Germany, namely nineteen ships of 88,218 tons ; an appreciable number of ships taken over from neutrals ; and new vessels completed in our own shipyards. Germany had

actually been deprived of forty-two ships of 227,215 tons—five per cent. of her total.

The neutral losses for December were thirty-nine ships of 85,170 tons. This was more than twice the number of ships lost in November, but they were of smaller size, as the tonnage was but three-quarters of the previous month. The total neutral losses for the four months were eighty-four ships of 264,788 tons. It is of interest to note that Norway and Sweden lost a larger number of ships than France—a belligerent.

The numbers of lives unjustifiably lost by Germany's lawless sinking of merchant ships, were over five hundred British and more than three hundred neutral. In striking contrast was the fact that only four German merchant seamen lost their lives, and they were killed by gunfire from one of their own U-boats as their ship was being taken into a British port by a prize crew. All the crews of the German ships which scuttled themselves were saved.

The naval losses from submarine and mine action in December were six trawlers and a drifter.

The tonnages of merchant shipping sunk by the various methods up to the end of the year were :—

	Tonnage.			Total.
	British.	French.	Neutral.	
Submarine (Torpedo)	236,623	46,856	72,573	356,052
Submarine (Gunfire)	29,457	—	8,058	37,515
Mine	98,016	6,065	140,455	244,536
Aircraft	2,419	—	757	3,176
Surface raider ...	55,133	—	1,918	57,051
Cause unknown ...	—	2,660	19,350	22,010
Total ...	421,648	55,581	243,111	720,340

NAVAL LOSSES AND CASUALTIES.

The Navy's success in keeping the seas free for Allied shipping and closing them to the enemy, was not achieved without price. To bridge the gap before sufficient hunting craft were available, the Admiralty decided to use aircraft carriers with some freedom to safeguard the unarmed and unconvoyed shipping. The 22-year-old *Courageous* was so employed on September 17, some 400 miles west of Land's End, an area in which for a fortnight she had done much useful work. She had an escort of four destroyers, but two had been sent to hunt a U-boat which had attacked a merchant ship. At dusk she turned up into the wind to land-on her aircraft, and happened to meet a U-boat. It was a 100-to-1 chance, for the course of the *Courageous* was quite unpredictable. The submarine had a "sitting shot at a haystack" and made the best use of it by torpedoing the ship. She sank in a matter of a quarter of an hour, with the loss of 515 officers and men.

A more disturbing loss was that of the battleship *Royal Oak*, torpedoed inside Scapa Flow at about 1.30 a.m. on October 14, with a loss of 810 officers and men. A U-boat, skilfully and courageously handled, had penetrated what were considered to be unpenetrable defences, carried out her daring exploit and got out again.

These were the only two naval losses in the first two months of the war—other than the submarine *Oxley* which was destroyed by an accidental explosion.

The German intensive minelaying activities in November caused only comparatively few losses in destroyers and other small naval craft, as compared with those of merchant ships. On the 13th, or not until ten weeks after the outbreak of war, occurred the loss of the first destroyer—the *Blanche*—by a mine. A week later (20th) the first minesweeping trawler, the *Mastiff*, was blown up, followed next day by the destroyer *Gipsy*—the first naval victim of a mine thought to have been laid by Nazi aircraft—and on the following day by the minesweeping trawler *Aragonite*. The trawler *Northern Rover* was also reported as missing. Another victim of a submarine's torpedo or a mine was the new cruiser *Belfast*, damaged on November 21 in the Firth of Forth, but she was got safely back to Rosyth and repaired.

In December (7th) or not until after three months of war, the first British destroyer, the *Jersey*, was torpedoed by a submarine, but she was also got safely into port and repaired. At the end of the month (28th) a battleship of the "Queen Elizabeth" class was hit by a U-boat torpedo when off the west coast of Scotland, but reached harbour under her own steam.

There were also other minor losses of small craft on naval service during the month, including six trawlers (*Washington*, *Evelina*, *Sedgefly*, *James Ludford*, *Loch Doon*, and *William Hallett*) and a drifter (*Ray of Hope*), the date and cause of the loss of three of the trawlers being unknown.

FAILURE OF THE U-BOATS.

The result of the U-boat campaign against our merchant shipping was that, whereas during the Great War one hundred and sixty-nine ships of 516,394 tons were sunk in one month (April, 1917), only one hundred and thirteen ships of 391,144 tons were sunk during the seventeen weeks to the end of December, 1939. On a monthly average this was less than one-fifth of the peak month of 1917. German shipping, on the other hand, was completely swept from the seas. The U-boat effort against warships was also ineffective, because although a battleship, an aircraft carrier and one destroyer were sunk, the proportion of the whole was small. Britain retained command of the sea and secured the lines of communications with every part of her Empire. Despite the fact that Germany's main effort was made against our seaborne trade, at the end of the year over 2,000 ships were still regularly at sea, and 100 to 150 vessels moved in and out of United Kingdom ports every day. The truth was that the U-boat attack had failed from the start—as it was doomed to fail under conditions of modern warfare which had caught up with and negated its 1914–18 advantages.

II.—THE ATTACK ON U-BOATS.

The problem of dealing with the submarine menace involved two factors: (1) defensive, the protection of merchant shipping,

and (2) offensive, the naval attack on the submarines themselves. The most important requirements were to be able, first, to detect the U-boats when submerged, so eliminating their advantage of secrecy and, secondly, to destroy them.

In the Great War when the first German submarine campaign against merchant shipping began in February, 1915, it was unexpected and we were caught largely unprepared. Unarmed trawlers were sent out on patrol, largely as bluff, and the gunsmiths' shops of London were combed for sporting guns for their use. As late as February, 1917, when the unrestricted campaign began, there were no really satisfactory means of detecting submerged submarines, although the hydrophone was in process of being developed. Even when a U-boat was thought to have been located, depth charges, first tried with success in July, 1916, were still not available in sufficient numbers.

Defensive armament for certain merchant ships had been adopted early in the war. The convoy system, later to prove one of the greatest antidotes, was not yet in operation in February, 1917, escorts being provided only for special ships such as troopships, tankers, etc. Despite this late expansion of anti-submarine efforts Germany lost one hundred and seventy-eight U-boats during the war—sixty-three in 1917 and sixty-nine in 1918, or two-thirds in these two years.

In September, 1939, we not only had the experience of 1914–18, but also the advantage of the anti-submarine measures which had been developed in the intervening twenty-one years. In the two years before the war, numbers of merchant ships had been strengthened for the fitting of defensive armament. Over 2,000 guns were available, as well as otters for protection against mines. Officers and selected ratings had been trained in convoy requirements, and to defend their ships to the best advantage if attacked.

As regards offensive measures against submarines, for seventeen years the Navy had been developing its new, secret detection apparatus, the Asdic, and training personnel in its use. This apparatus had produced highly successful results in locating submerged submarines. Depth-charges were available in ample numbers and arrangements made to increase the supply in war, and a satisfactory type of mine had been evolved.

When war broke out, the defensive arming of merchant ships proceeded apace. The convoy system, expected to require some three to five weeks to organise completely, was actually started for outward vessels in four days, and the first homebound convoy started in ten days. Mines were immediately laid in the Dover Straits and between the Tyne and the Humber to bar the passage of U-boats. A large British minefield was also laid in the Heligoland Bight to restrict and possibly trap U-boats. One handicap was a shortage of destroyers and hunting vessels, but this was partially solved by taking up a number of small craft from various sources. The result of all these anti-submarine measures was that whereas until late in the Great War we were on the defensive, in this war we took the offensive from the start.

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THE END OF A U-BOAT.

*Oil from the U-boat's fuel tanks, shattered by depth charges from the destroyer, burning on the surface.
(Associated Press photograph.)*

U-boats were subjected to intense and continuous day and night attacks by our destroyers, other small craft, the Fleet Air Arm, and the R.A.F., acting under cover of the main fleets and squadrons. Attacks were, in point of fact, five or six times as numerous as in any equal period in the Great War.

FIRST U-BOAT SUNK.

Three days after hostilities began, a Ministry of Information announcement about the war against submarines stated that "British warships have engaged them in several localities." It was added that it would not always be desirable to publish news of the destruction or damage of U-boats. But the following day it was reported that "an attack on a minelaying submarine is now believed to have been completely successful."

The Prime Minister (Mr. Chamberlain) in his first review of the general war situation in Parliament on September 7, said, "I think the country may rest assured that the Navy, with all their wartime experience of handling this problem, and with the added advantage of the methods of submarine detection and destruction which have since been developed, will increasingly bring the problem under control." A week later (13th), in his second statement, the Prime Minister announced that "submarines are being constantly attacked and that successes have been achieved."

On the following day a convoy of vessels to Scotland was reported to have reached port after eluding two German submarines, and the next day the Admiralty reported the destruction of "a number of German submarines." It was considered tolerably certain that the submarine which sank the *Courageous* on the 17th was sunk by the destroyer escort.

In his third review on September 20, the Prime Minister was able to say :

"The achievements of the anti-submarine campaign after a little over a fortnight of war have exceeded anything which the British Navy accomplished even over much longer periods in the last war."

In spite of the difficulty sometimes of being certain that a submarine was destroyed, there had been occasions when vessels were unmistakably holed and sunk, and the Prime Minister said :

"I am quite confident that I am understating the case when I say that already six or seven German submarines have paid the full penalty. . . . In some cases their crews have been captured."

On the same day, a Paris report stated that the French Navy had sunk four or five U-boats.

The sinkings by the British Navy alone, in a period when Germany was expected to make her maximum effort and our counter-measures had not been developed to the full, compared very favourably with results achieved at the height of the anti-submarine campaign in 1917 and 1918. In 1917 an average of a little over one U-boat a week was sunk—in 1918 an average of $1\frac{1}{2}$ U-boats a week. In the first fortnight of the present war the British average of sinkings

or captures had been $3\frac{1}{2}$ a week. Allied anti-U-boat activity was proving three times as effective as it was in 1917-18.

On September 23, news was published of R.A.F. machines in successful action against German submarines, and, for the first time in history, the dramatic rescue by two flying boats of a merchant ship's crew. The ship in this incident was the cargo steamer Kensington Court which had been torpedoed in the Atlantic. The Navy, with the help of the R.A.F. Coastal Command, had also had considerable success in anti-submarine warfare and it was reported that a British trawler had rammed and sunk a U-boat "by accident." The latter part of this report may be considered optimistic.

Two days later, survivors landing in America reported that an R.A.F. patrol had bombed and sunk a German submarine 350 miles off the coast of Ireland directly after it had machine-gunned and torpedoed the British steamer Kafiristan without warning.

The First Lord of the Admiralty (Mr. Churchill) gave his first review of naval progress in the House of Commons on September 26. He said the submarine menace had been countered in three ways, the first being the convoy system which was already in full operation both ways, and which would greatly reduce the number of targets for submarines. The second was the equipping of our merchant ships and fast liners with defensive armament both against U-boat and aeroplane. The third reply was the British attack upon the U-boat which he remarked was "being delivered with the utmost vigour and intensity."

Mr. Churchill compared the position with that of the Great War when he was also First Lord and said :

"There were moments when the problem seemed well-nigh insoluble. Very often to hunt down a U-boat it was necessary to use a flotilla of fifteen to twenty vessels working for a whole day on vaguest indications. Now two destroyers, or even one, can maintain a prolonged and relentless pursuit. . . ."

Taking the Prime Minister's figure of the previous week of six or seven U-boats destroyed ("and since then we had some fruitful and hopeful days"), the First Lord pointed out that it represented one-tenth of the total enemy submarine fleet destroyed during the first fortnight of the war, and was probably a quarter, or perhaps even a third, of all the U-boats being actively employed.

The Minister for Air (Sir Kingsley Wood) in his first statement to Parliament the next day, told of the part the Royal Air Force was playing in the defeat of U-boat activity. He announced that during the first four weeks of the war the Coastal Command, working in close co-operation with the Navy, had flown approximately 1,000,000 miles on reconnaissance, anti-submarine, and convoy patrols, and provided air escorts for over one hundred convoys.

Submarines had been sighted by aircraft on seventy-two occasions, and thirty-four attacks were delivered, some of which were undoubtedly successful. But, as he pointed out, the value of the work performed could not be gauged by attacks alone. Aircraft were valuable as a preventive, and U-boat prisoners had confirmed that the mere presence of an aircraft greatly hampered their plans.

"Friday, the 18th of October, proved an unlucky day for the U-boats," the Admiralty announced, "two having been destroyed." Later, the destruction of a third that day was reported.

GOOD PROGRESS MADE.

Four days later the First Lord, in answer to a question in Parliament about the submarine campaign, stated that the Admiralty had hitherto refrained from giving the figures of the slaughter of U-boats which was proceeding with increasing severity. He gave the latest figure for the previous Friday as four—including two of the largest and latest ocean-going U-boats.

"Nothing like this rate of destruction," he said, "was attained at any moment in the last war. During the last week . . . seven U-boats were sunk. . . . Over the . . . six weeks . . . we may estimate that thirteen U-boats have been sunk, that five have been seriously damaged and possibly sunk, and several others damaged. . . . Besides this, two-thirds . . . which have been out raiding have suffered attack from depth-charges. The French Navy . . . has also been active. . . . We believe, therefore, that out of about sixty U-boats ready for action . . . about one-third have been sunk or seriously damaged; and of the largest and latest ocean-going U-boats the proportion is at least one-fifth. We actually hold survivors from the crews of three vessels. . . . Something from a third to a quarter of the total U-boat fleet . . . has been destroyed."

A shattered German submarine was discovered on the Goodwin Sands off Deal, on October 26. None of her crew survived. Nine days later the bodies of five German sailors wearing submarine escape apparatus were washed up on the coast between Rye and Hythe.

On November 8, the First Lord in his statement to Parliament, after remarking that the war at sea was the only war which had been proceeding on a full scale, estimated that Germany was completing two new U-boats a week, in which case there would be a hundred to face in January, less the number sunk. These sinkings, at a conservative estimate, lay between two and four a week according to the number at sea. The hardest part of the Nazi's problem, however, was to train the crews and, in particular, to provide officers with sufficient skill and daring, in order to be at all successful.

On our side we now had three times as many hunting craft as at the outbreak of the war, and very large reinforcements would flow in increasingly from the spring of 1940 onwards. Even at the time it was considered that perhaps one in four of the U-boats from each excursion never returned, and the others were likely to have suffered grievous experiences which were bound to act as a deterrent.

The Minister of Shipping (Sir John Gilmour), in his first statement to Parliament on November 14, announced that "there had been 3,070 ships convoyed and only seven out of that number had been lost." Steps were being taken to increase the number of convoys as and when further escort was available.

The last few days of November and the first few of December were fruitful ones for our anti-submarine forces. Five U-boats were sunk in a week—two while trying to penetrate our coastal defences—and a naval trawler also claimed to have sunk two. On December 3 it was announced that, in addition to the sinking of a

U-boat in the North Sea by an R.A.F. reconnaissance machine, four others had been accounted for. One was discovered in the darkness by a patrol and successfully depth-charged.

Three days later the presence of another was recorded and after a shore battery had been in action with her, surface craft attacked with depth-charges. A small fishing smack sighted another near the coast and informed the naval authorities. The U-boat, unaware, continued on her mission until midnight, when hunting craft raced up and sprinkled her with depth-charges. Another was caught in the British Channel, the entire crew being captured. Forty-three German officers and men of one of the latest U-boats, which met its fate at the hands of two of our destroyers, were landed in Scotland.

On the same day it was officially announced that we had so far captured one hundred and forty-four U-boat prisoners. The number did not give a clue to the total of submarines sunk, because in some instances the whole of the crew may have been captured, and in others none. But it was assumed that thirty U-boats had been sunk in all, and, based on an average crew of thirty-five, the total personnel involved must have been over one thousand. The number of prisoners, therefore, was only one-seventh of the total crews.

On December 6 the First Lord, in Parliament, reviewed the U-boat situation after the first three months of war.

"The destruction of U-boats," he said, "is proceeding normally . . . at a rate superior to . . . the German power of replacing U-boats and competently trained crews. The rate of destruction varies . . . with the number . . . actively hunting. . . . In the last week they have been active and we . . . think that five certainly have met their fate."

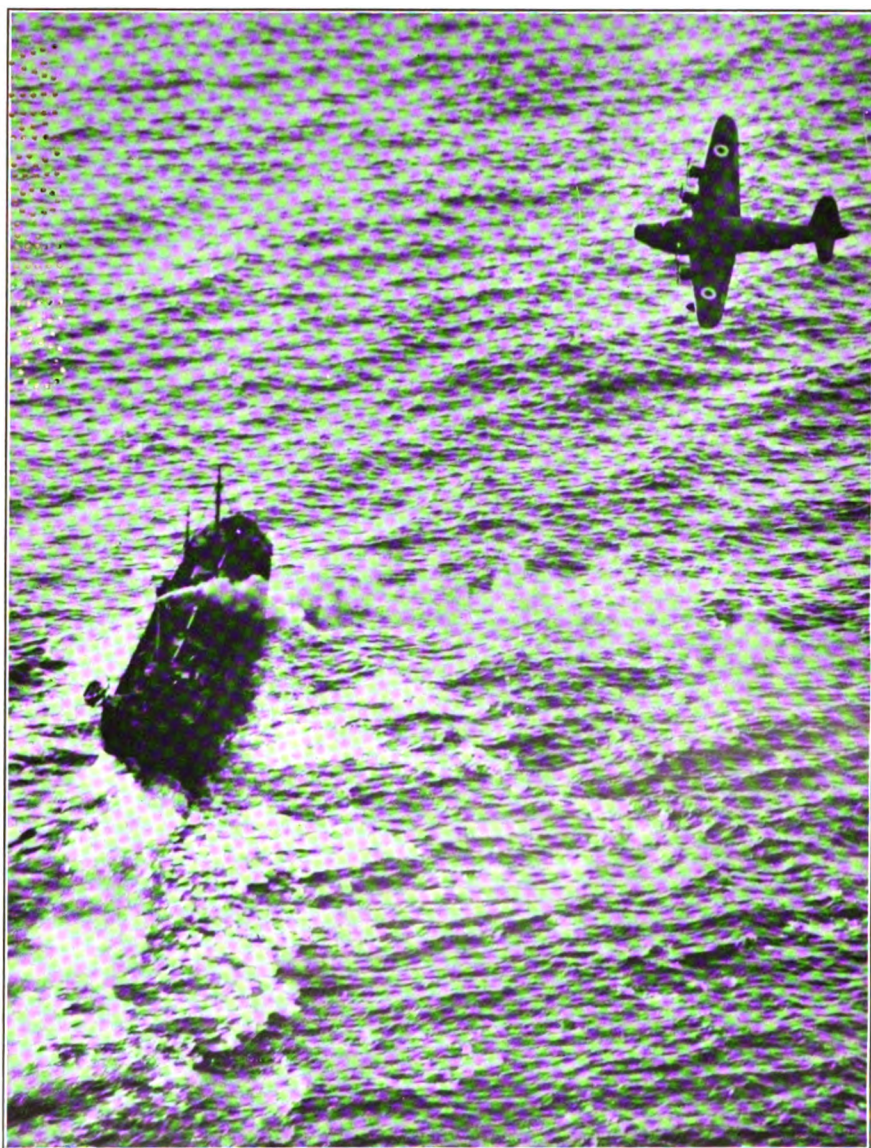
SUCCESS OF CONVOY.

Over 1,000 merchant ships had been armed for defensive purposes and before long it was hoped the number would be 2,000. Many duels had been fought in which the U-boat, fearing to be damaged and so unable to dive, had given up the attack and had been beaten off. The convoy system was in full operation; few ships had been attacked in convoy; less than one in seven hundred and fifty had been sunk. The institution of slow and fast convoys was reducing the loss of carrying power. Five weeks later (January 10) it was announced that the total number of ships convoyed—British, Allied, and neutral—had been 5,911; the total number sunk while in convoys was twelve. No more than one-fifth of one per cent. of the ships convoyed by the British Navy had been lost through enemy action.

On December 8 a further development occurred in the unrestricted submarine campaign, namely attacks on vessels inside neutral territorial waters. The first was the British ship *Thomas Walton*, attacked by a U-boat off Narvik, Norway. Three days later the Greek vessel *Garoufalia* was similarly attacked when close off the Norwegian coast. Later, the London steamer *Deptford* was torpedoed when only about 850 yards from the Norwegian shore—in complete disregard of international law.

On December 8, also, it was reported that three more U-boats had





FLYING-BOAT ON PATROL EXAMINES A MERCHANT SHIP.

(Official R.A.F. photograph.)

been sunk : (1) by an R.A.F. pilot on patrol near Arctic waters, (2) by a warplane of the Coastal Command in the Atlantic, and (3) it was believed that the U-boat which had attacked the destroyer *Jersey* the day before was sunk by other destroyers.

The Minister for Air, in his second review of the war given in Parliament on December 12, stated that Coastal Command aircraft had attacked submarines on fifty-seven occasions, causing in nineteen cases substantial damage.

The French Minister of Marine (M. Campinchi) on December 20 announced that during the past few days two more German submarines had been destroyed by French ships—one of them the destroyer *Sirocco*, which already had two to her credit. The Paris correspondent of *The Times* reported, "This brings the total for the French Fleet up to twelve, while French sources credit the British Navy with thirty-six more."

The various measures for the defence of our merchant shipping were more successful, and the detection and destruction of submerged U-boats more frequent than was generally expected by those not in close touch with modern scientific developments. Practically half the U-boats built and building at the outbreak of war and expected to be completed by the end of the year (101) had been destroyed. This meant that trained crews amounting to over 1,600 officers and ratings were killed or interned. Whereas, for the year 1918, the average destruction of U-boats was $1\frac{1}{2}$ a week, in 1939 it averaged three a week, or double the best period of the Great War.

III.—BRITISH SUBMARINE OPERATIONS.

The number of British submarines, built and building, at the outbreak of war was fifty-eight and fourteen respectively, made up as follows :—

Tonnage.		Built.	Building.	Total.
<i>Ocean-going</i>				
1,800 ...	...	3	—	3
1,500 ...	...	21	—	21
1,300 ...	...	3	—	3
1,000 ...	...	4	10	14
		31	10	41
<i>Sea-going</i>				
640-760 ...	...	15	—	15
<i>Coastal</i>				
410-540 ...	...	12	—	12
1939 Programme				
Unknown ...	...	—	4	4
		58	14	72

There are three reasons why the number of British submarines was less than that of Germany : (1) the submarine is not the antidote to the submarine ; (2) our policy is to confine submarine warfare to legitimate targets, namely warships, whereas the German policy

is to use them for indiscriminate attacks on merchant shipping; and (3) the Germans went in for small vessels and produced a larger number out of a similar amount of tonnage.

At the outbreak of hostilities our submarines proceeded to their war stations, on patrol and reconnaissance duties, in the Heligoland Bight and elsewhere. With very few German warships at sea outside their own coastal waters, British submarines suffered from the serious disadvantage that they had very few targets to attack, and it was only by penetrating the German minefields and threading a way into the strongly defended enemy waters that any success was possible.

No announcements were made of our submarines' activities until October 21, when it was stated that Britain's submarines were playing a big part in driving the German U-boats from our merchant shipping lanes.

Towards the end of September the 670-ton submarine *Spearfish* (Lieut. J. H. Eaden), when in enemy waters underwent an ordeal by depth-charges. She managed to crawl away at night on one motor, unable to dive. Next day, passing enemy bombers failed to observe her and at midnight destroyers arrived to escort her. On the third day they fell in with a battle squadron. Twenty enemy aircraft attacked but they were repulsed with a loss of two machines, and damage to a third, without any British losses or casualties; and eventually the crippled *Spearfish* reached harbour.

It was not until three months of war (November 30) that a British submarine again came into the news. A report was received that one, which had been damaged in heavy gale weather in the Bight, had put into a small Norwegian harbour near Stavanger. She was accompanied by two destroyers, and an aircraft escort saw her safely in and out again when her damage had been made good. During passage into harbour German aircraft came to attack, but our machines repulsed them and shot one down into the sea.

BRITISH SUBMARINE SUCCESSES.

On December 11 the Admiralty announced that one of our submarines had been within torpedo range of the German liner *Bremen*, while she was on passage from Murmansk to Germany, but in accordance with international law had not attacked her. A good deal of ill-informed criticism as to why the ship was not sunk arose among sections of the public which did not appreciate that to do so would have been piracy. A week later it was announced that the submarine was the *Salmon* (Lieut.-Com. E. O. Bickford) and that her signal to the *Bremen* to stop had been ignored. She had been about to fire a warning shot across the *Bremen's* bows, but was forced to submerge by the arrival of German aircraft.

The *Salmon*, a small submarine of 670 tons, had been on patrol for a fortnight. She had not been long at sea before she sighted a large U-boat, fired a salvo of torpedoes and sank her. A few days later occurred the *Bremen* episode. Less than twenty-four hours afterwards the *Salmon* sighted a German squadron consisting of

two battle cruisers, a "pocket battleship," and three cruisers. The cruisers passed within range and the submarine fired six torpedoes at different angles. The first hit the cruiser Leipzig, then further explosions indicated that two other torpedoes had hit a heavy cruiser of the Blücher class. It was considered that one of the cruisers may well have failed to reach port. Though hunted and depth-charged for two hours the Salmon escaped unscathed.

On the same day the Admiralty announced another success, this time by a smaller submarine of 540 tons :—

"H.M.S. Ursula (Lieut.-Com. G. C. Phillips) reports that she sank one "Köln" class cruiser at the mouth of the Elbe on December 14. The cruiser was screened by six destroyers."

Thus, in one week—the best week for our submarines "I can remember in this or the last war," as Mr. Churchill remarked in a broadcast on December 18—two small submarines had sunk or put out of action a considerable proportion of the total German cruiser strength, as well as a U-boat, and in the same week on the other side of the globe the "pocket battleship" Graf Spee had met her inglorious end.

So far we were immune from submarine losses; but on January 16 the Admiralty announced that three British submarines, Seahorse, Starfish, and Undine, which had been engaged on particularly hazardous service, had failed to return to their base or to report, and must be regarded as lost. The crews of the Starfish and Undine were later reported to be prisoners of war.

FOUR MONTHS' RESULTS.

The result of the first four months of the unrestricted submarine campaign showed that the German High Command had greatly over-estimated the capabilities of the U-boat, in which there had been no outstanding improvement in design, or development in weapons, during the past twenty years. One of the outstanding features of the campaign was, therefore, the failure of the U-boats to achieve results commensurate with their numbers and losses.

The Germans had also apparently failed to appreciate the tendency in scientific warfare for defence to overtake offence, and had greatly under-estimated the effect of defensive measures such as convoy and the progress we had made in the detection of submarines. Once a means of locating submerged submarines was found, secrecy, their greatest asset, was nullified. Their opportunities for unsuspected lurking were at once restricted; improved defence reduced their chances of successful attacks; and the possibility of their destruction was made considerably greater.

The invention of a successful detection apparatus was the most important development in submarine warfare since the Great War. The new use of aircraft for warning merchant shipping and for attacking U-boats, also contributed greatly to the mastery of the submarine menace.

The Germans having decided to use their submarines to the greatest extent possible, had the choice of employing them legally

against the British Navy, which was enforcing the blockade of Germany, or illegally against merchant shipping in an effort themselves to conduct a blockade of Great Britain. They chose the line of least resistance—namely to attack merchant shipping, both Allied and neutral. This led to the inevitable symptoms of desperation—guerilla tactics, the indiscriminate sinking of belligerent and neutral merchant ships without warning or provision for the safety of non-combatants and women and children—which put German naval policy outside the pale of international law, the dictates of humanity, and the long-established custom of the sea. It alienated, from the start, the goodwill of neutrals which was more necessary to Germany than even in the Great War. Both morally and tactically it was a bad decision.

As counter measures were developed, their methods deteriorated from the gun to the unseen torpedo, then to the unannounced mine, and, finally, to aircraft machine-gunning and bombing helpless fishing craft and even lightships. Yet, in spite of the adoption of flagrant piracy as a "policy" of naval warfare, the German object was not achieved.

Shipping continued to come unchecked to and from our ports. As reward for the loss of half their U-boats, with some 1,600 of their specially trained personnel, and for incurring the responsibility to the world for the unjustifiable deaths of non-combatants, the Nazis reduced our merchant shipping by a mere 2 per cent.

Meanwhile, British submarines, acting under the distant, but none the less effective, support of the main fleet's command of the sea, confined themselves to legitimate warfare. Their success was only limited by the lack of targets which the infrequent excursions of German warships made inevitable. Such being the case, our small coastal submarines penetrated the Heligoland Bight defences and bearded the enemy in their own waters. But there was a toll to be paid—as was shown early in the New Year by the loss of three of our own submarines.

The spirit of the personnel, always a greater factor than ships or weapons, was more important than in any previous war. Increased torpedo, mine, and aircraft dangers made the work of Mercantile Marine, Navy, and Fishing Fleets alike infinitely more hazardous. Nothing could damp the spirit of our merchant seamen who, when their ships were sunk, promptly volunteered for others and were off to sea again. The naval personnel shouldered the main burden of clearing the seas of enemy ships, and in so doing their ships spent more days at sea and steamed greater distances than ever before. To the crews of the minesweepers—naval, reserve, and volunteers—fell the more dangerous task of cleansing the seas of mines. All acquitted themselves well.

As long as the submarine campaign continues, further losses are likely to be incurred, but, unlike in the Great War, the U-boat is never again likely to gain the upper hand.

H. PURSEY.

CHAPTER VII.

AIR OPERATIONS AND THE WAR AT SEA.

A CLEARLY defined lull in air operations marked the end of 1939 and consequently it is possible to take the period from the beginning of the war, on September 3, to the end of 1939 and to subject it to independent examination.

This chapter is concentrated mainly on the air war at sea, but it so happens that during the opening four months of the war nearly all the more important air operations had a direct connection with the war at sea. It is therefore possible to review the whole period in this chapter. All conclusions will obviously be subject to revision when the events of the period are finally fitted into the larger fabric of the war, for only then will each action be seen in perspective. But the fundamental facts of the air operations of 1939 will remain and these provide strategical and tactical indications of absorbing interest.

First of all the opening stages of the war falsified the confident predictions of the large majority of students of the uses of air power. General Douhet, whether by reason of a more forceful method of exposition or by reason of the uncompromising nature of his thesis, had attracted vast numbers of adherents to his doctrine of air war. They believed that strategical bombing, directed at objectives of military importance in enemy country, would be the chief duty of the air arm. They believed that aircraft would be used in mass to wreck the communications and to disorganise the internal economy of the enemy country. They believed that aircraft would act quickly and that the opening stage of any major war would be almost exclusively fought in the air. They believed that sea and land warfare would only supervene upon aerial warfare on a grand scale ; that they could not even start without immense aerial preparation.

When war was declared between the Allies and Germany many believed that General Douhet would be justified and they expected an aerial onslaught of the first magnitude. They did not know if it would be directed against military objectives or not ; but they did know that strategical bombing must cost the lives of civilians. Factories are so frequently surrounded by houses that bombing would have to attain an accuracy quite beyond its reach if it were to hit the factories and spare the houses or, in other words, to confine itself to strictly military objectives. Consequently the cities of France and of Great Britain braced themselves for the attack. The people expected it to come. They expected that the Allied air forces would attack Germany as well. They expected, in short,

that the air arm would be used in accordance with the Douhet doctrine and that there would be mass strategical bombing on both sides.

They were mistaken. Aerial operations during the first four months of war, instead of being independent, were almost entirely co-operative. On the Allies' side they were designed to lend what support they could to the work of the Royal Navy ; on the German side they were designed to hamper the work of the Royal Navy and to inflict damage on the British Fleet. When Germany attacked she attacked ships or seaplane bases. When Great Britain attacked she attacked ships or seaplane bases. The new war, instead of being waged in a new way, started in much the same way as the old war ended, with the sole exception that there was no independent air action and no bombing of strategical objectives in Germany. So the air arm, which the prophets had said would dominate the opening stages of the new war, actually played a lesser part in those stages than it played in the war of 1914-18.

It is not difficult to assign possible reasons for the lack of strategical bombing by Germany during those opening stages. She was still engaged in Poland with a part of her air force there. She may not have been satisfied that an attack, if made, could have been made on a large enough scale. After the Polish campaign she was probably anxious not to instigate a strategical bombing competition because she must have wanted to preserve her industrial areas from interruption while she drove them to their uttermost productive limits. It is less easy at this stage to assign reasons for the decision of the Allies to withhold strategical bombing. It may be that the decision was taken that the risk of causing civilian casualties ought not to be taken except as an incidental to unavoidable reprisals. Or the Allies may have been waiting to see the immense Dominions training scheme under way before they took action likely to release a bombing competition. Speculation on the matter is profitless at the present time. All that need be noted is that, during the whole of 1939, the Royal Air Force was working under close restrictions as to bombing objectives. Roughly it may be said that the Royal Air Force and the French *Armée de l'Air* were ordered not to bomb land targets and to confine their bombing at sea to warships. All the aerial actions which took place during the period under review must be interpreted with those orders in mind. Let us now sum up the outstanding features of the air operations of 1939. They are :

No strategical bombing by either side.

Intermittent bombing raids on marine targets by both sides.

Reconnaissance flights by both sides.

Defensive fighter action by both sides.

Before going into further details concerning these operations it is as well to make it clear that the absence of strategical bombing by both sides does not necessarily mean that this form of the application of air power has been discarded. In all war operations the timing is of the utmost importance. Germany employed intensive strategical bombing in Poland and timed it so that it produced the maximum

effect, for it did two things at once : it disrupted the ordinary life of the country behind the lines and it prepared the way, by cutting communications, for the rapid advance of both motorised and mechanised ground troops. If Germany launches a land offensive on the west, there is nothing in the air operations of 1939 to indicate that she will not at the same time employ her air force for strategical bombing.

We may now note some of the more important air operations of 1939 :

Date.	Place.	Objective.	Results.
Sept. 4 .	Wilhelmshaven and Brunsbüttel.	The bombing of German warships.	Two warships believed hit and one badly damaged. Five British aeroplanes lost.
Sept. 4 .	North-west Germany.	Reconnaissance with leaflet dropping.	—
Sept. 29 .	Heligoland.	Bombing of German Fleet.	No details. Both sides lost aeroplanes.
Oct. 16 .	Firth of Forth.	Bombing of British warships.	Southampton hit and casualties in Edinburgh and Mohawk. Four German machines shot down.
Oct. 17 .	Scapa Flow.	Bombing of British warships.	Iron Duke damaged. Two German machines shot down.
Oct. 21 .	North Sea.	Bombing attack on British convoy by twelve machines.	Seven German machines shot down.
Nov. 6 .	Saarlouis.	Air battle. French v. Germans.	Nine out of twenty-seven German machines shot down by nine French.
Nov. 13 .	Shetlands.	Bombing.	Twenty 50-kg. bombs dropped. No serious damage.
Nov. 22 .	Shetlands.	Raid.	One British flying-boat destroyed.
Nov. 23 .	Thames estuary.	Mine-laying from the air.	—
Nov. 28 .	Borkum.	Seaplane base.	Two German seaplanes damaged.
Dec. 3 .	Heligoland.	Bombing of German warships.	Hits made. One British machine missing.
Dec. 13 .	Sylt, Borkum, Norderney.	Security patrols for checking mine-laying aircraft.	—
Dec. 14 .	Heligoland.	Air combat.	Four German machines brought down and three British machines lost.
Dec. 18 .	Heligoland.	Air battle.	Twelve German machines brought down. Seven British missing.

In addition to the actions given in this table two others may be mentioned, the first on Tuesday, September 26, and the second on Monday, October 9, both in the North Sea. The first consisted of a raid by German aircraft on the Home Fleet when it was about 150 miles from Norway. Dive-bombing was used, but without

success, although the Germans claimed that they had sunk the aircraft carrier *Ark Royal*.

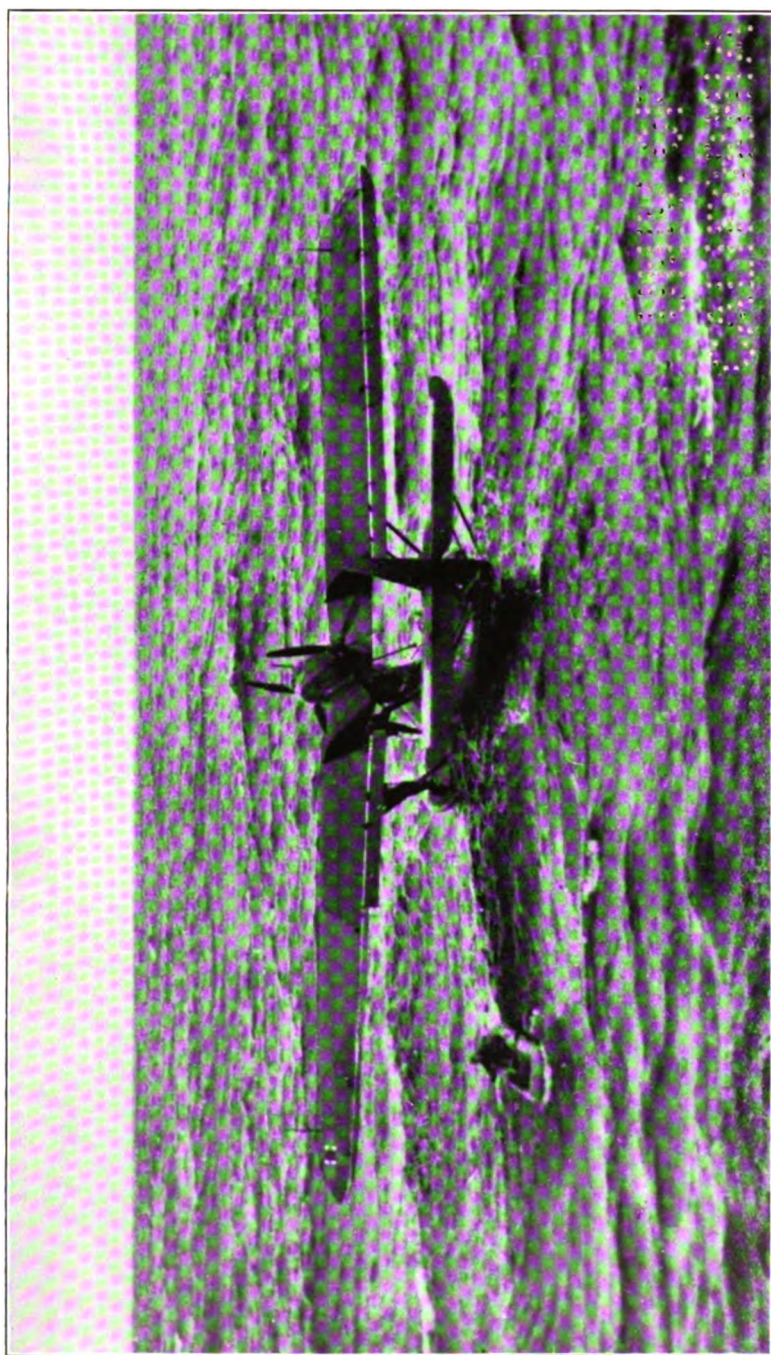
This was in some ways an interesting claim, for subsequent information made it seem likely that the dive-bombing pilots genuinely thought that they had succeeded in sinking the ship. It seems that one bomb did fall near the *Ark Royal*, and that at the time the ship's helm was hard over, giving her a list. The combination of the smoke from anti-aircraft guns, the water disturbance from the exploding bomb, and the list of the ship may well have led the German pilot to form a false impression, especially as German pilots coming on the scene later were unable to see any trace of the *Ark Royal* (she had doubtless gone elsewhere to land-on her aircraft). During this action the Germans lost two aeroplanes and had another badly damaged. The *Ark Royal* was untouched.

In the second action the German losses were four, two of their machines coming down in neutral territory. The Germans attacked the British warships with a good deal of determination, but anti-aircraft fire disturbed their bomb-aiming to such an extent that no damage was done to any British ship. This action was a demonstration of the high degree of accuracy it is possible to achieve with naval anti-aircraft fire ; and of the protection this fire can afford to warships against small air forces.

It is worth observing that this list is not intended to be complete and that it was compiled after a general sifting of the frequently conflicting reports that come in from different sources. No sort of claim can be made for its accuracy, for details of casualties and of damage inflicted are often deliberately concealed for military reasons. More often the concealment is on the German side and it is only on the German side that deliberate mis-statements are made. Nevertheless it remains impossible to compile a really complete and really authentic list of actions while the war continues and it will only be some time after it is over and after there has been opportunity for the inspection of all relevant documents that it will be possible to attempt an exact table of aerial actions.

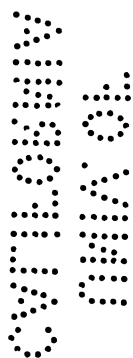
The table given, however, does enable a few points to be noted. In the first place it will be remarked that, with the exception of the fine action fought by the French *Armée de l'Air* on November 6 in the region of Saarlouis, there have been no large-scale operations on the western front. Work there has been confined to reconnaissance flights, often by single machines, and to relatively small combats and duels between reconnaissance and fighting aeroplanes. There was an action on October 1 over the Siegfried Line when five British reconnaissance aeroplanes met fifteen German Messerschmitt fighters with the result that four of the British machines were brought down and two of the German, but it hardly merits to be grouped with those actions listed, for it had no larger significance.

There is, however, one group of actions which are not given in the list because they may be said to be primarily naval ; these are the actions fought against submarines by the aeroplanes of the Coastal Command. Aeroplanes of this Command, working in collaboration with ships and with the aeroplanes of the Fleet Air Arm, both shore-



A GERMAN FLYING-BOAT.

Brought down in the North Sea on October 10, 1939, by anti-aircraft fire from British cruisers. The airman has launched his collapsible rubber boat.
(Central Press photograph.)



based and ship-borne, were kept more nearly continuously engaged since the opening of the war than any other aeroplanes. Their duty was primarily search and secondarily the attack of enemy submarines on every occasion on which contact with them could be established. The Coastal Command flew during 1939 at the rate of about one million miles a month. Their flying was regulated according to the mathematical search formula which was devised some years ago. Its effectiveness may be gauged by the fact that more than 120 submarines were sighted in the period under review and more than fifty attacks made. The announcement of the first sinking of a German submarine by an aeroplane of the Coastal Command was made on September 18. Subsequently details were given of further sinkings at intervals.

The Coastal Command disposes not only landplanes but also flying-boats, and these were occupied on long-distance patrol work over the North Sea and parts of the Atlantic Ocean. An incidental duty which fell to the lot of both landplanes and flying-boats was that of rescuing or helping to rescue seamen whose ships had been sunk by German torpedoes or mines. The first rescue of this kind was when the crew of the Kensington Court, numbering some thirty men, was rescued by two flying-boats of the "Sunderland" class which alighted on the water and took them onboard by means of small dinghies. On other occasions men, seen drifting on improvised rafts, were rescued by landplanes which were able to direct surface vessels to them. These activities, no less than the attacks made on submarines, showed the thoroughness with which the continuous search of the sea was performed. It was a use of the air arm which was visualised before the war indeed, but which was certainly not visualised on the large scale of actuality. Here was a case of the collaboration of the Royal Air Force with the Royal Navy in the achievement of a vital naval purpose.

The collaboration between the Bomber Command and the Royal Navy was clearly less direct than between the Coastal Command and the Royal Navy. Nevertheless it was close and many of the most important air operations of the first four months of the war may be traced to it. The opening raid by the Royal Air Force, which has been mis-called the "Kiel raid"—for in fact it was delivered at the other end of the Kiel Canal on Brunsbüttel and on Wilhelmshaven—was the outcome of a decision that it would be of the highest value if one or more of the most effective units of the German Fleet could be put out of action immediately after war was declared. The consequence was that a formation comprising a number of Bristol Blenheim Mark IV bombing aeroplanes, together with some Vickers-Armstrongs Wellington bombing aeroplanes, set out for the places where, it was believed, as a consequence of previous reconnaissance flights, they would find German warships. They carried what the official communiqué described as "heavy" bombs, from which it may be inferred that they were 500-lb. bombs.

The raid was performed with great address and seemed to take the defences by surprise. Unfortunately, however, some of the first machines to reach the battleship which was their target, in their

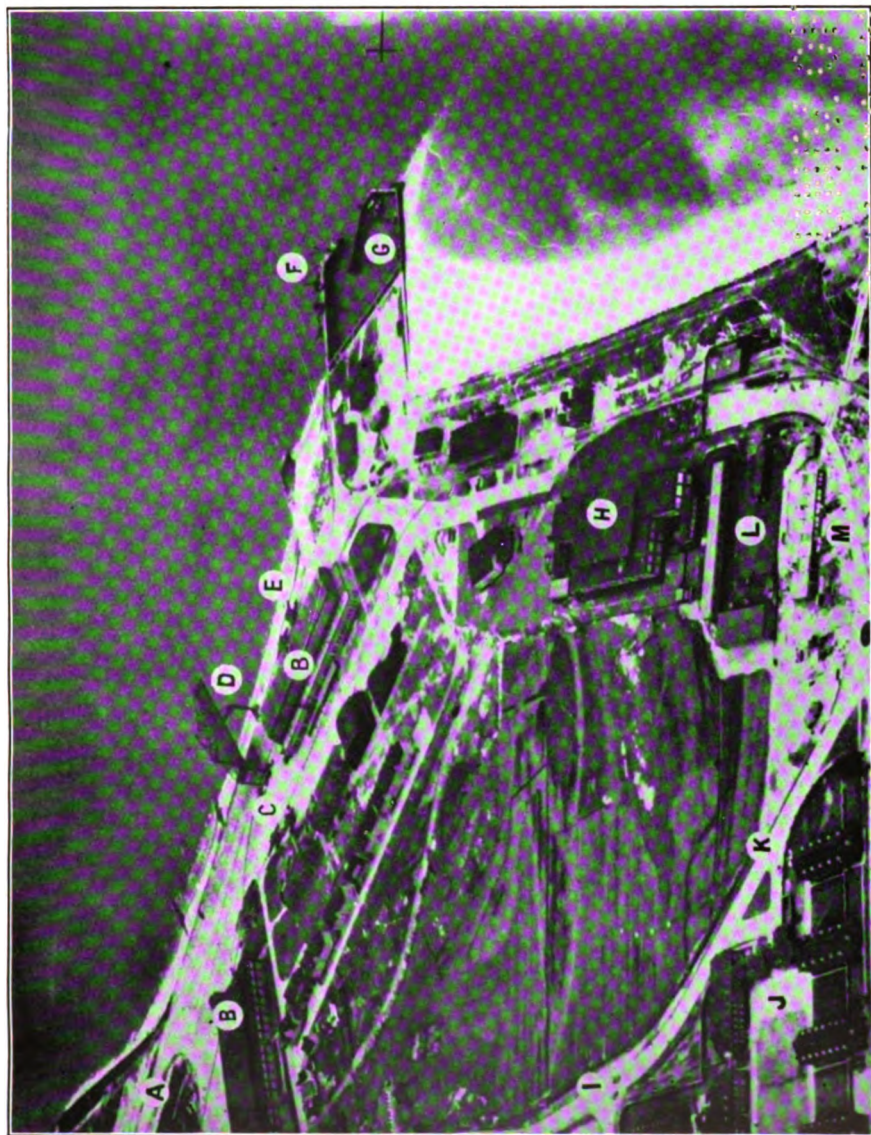
anxiety to ensure a direct hit, flew so low that they were struck by the flying fragments of their own bombs and at least one of them was brought down in this way. Meanwhile the anti-aircraft defences came into action and succeeded in bringing down other British machines. Even so, it seems from the results that were obtained that the losses were more than justified by the effect of the blow that was delivered upon Germany's naval power.

It was at about the same time as the Wilhelmshaven raid that the first leaflet raids were performed. These gave rise to a great deal of ill-informed speculation at the time. Our aeroplanes went over Germany, often penetrating 200 miles into enemy territory, and dropped packets of leaflets containing messages to the German people compiled by the Ministry of Information. A very large number of raids of this kind were performed without any of the British aeroplanes being brought down or even heavily attacked.

The adequacy of the German anti-aircraft defences was immediately questioned and large numbers of fantastic theories about their inefficiency were put forward. Actually it emerged in the course of time that single aeroplanes, flying extremely high, were difficult to detect soon enough for effective counter measures to be applied. It is also to be observed that many of the British leaflet raids were done in bad weather when it was possible for the aeroplanes to take shelter among clouds. None of this, however, detracts from the excellence of the work of the pilots and aircraft crews who took part, because flying over enemy territory for long periods for no other purpose than to drop leaflets was found to be an exceedingly trying business. Many of the leaflet flights were concurrent with reconnaissance flights and large numbers of photographs of German positions were secured. Not only were these taken of positions far over the enemy lines, but they were also taken of positions near the lines. A mosaic was formed of the Siegfried line early in the war.

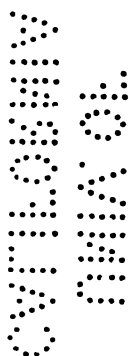
The Germans made it their custom to issue to the German press for publication a selection of the photographs alleged to have been taken by their machines. Some of the reproductions indicated that the enemy aircraft crews had succeeded in doing some extremely effective photographic reconnaissances of the British Isles. The pictures included fuel storage depots, aerodromes, docks, and harbours. The policy of the British Air Ministry during 1939 was not to publish pictures taken by British reconnaissance machines although one or two exceptions were made in the case of some of the pictures obtained during shallow reconnaissance flights near the western front. The point to be noted here is that, although the Royal Air Force took the initiative in reconnaissance flights, the Germans later adopted the same procedure and that although the British flights were more frequent than the German, neither side can be said to have established any remarkable ascendancy over the other in this field.

Towards the end of September there was the German attack on the Home Fleet which has already been described and the Royal Air Force made another attack on German warships, this time in the Heligoland region. The attack was not a success though some



GERMAN SEAPLANE BASE AT LIST, ISLAND OF SYLT.

A. W/T Station; B. Hangar; C. Seaplanes; D. Crane; E. Aircraft; F, G. Piers enclosing basin; H. Repair shop; I. Vehicles; J. Barracks; K. Men; L. Motor transport sheds; M. Building.
 (Official R.A.F. photograph, taken on a reconnaissance flight.)



damage may have been done. There were British losses. On October 9 the Germans sought to hit back at the Fleet, but, as we have seen, without effect. The Germans hit back more effectively in their raid on British warships in the Firth of Forth on October 16. This raid was preceded by a reconnaissance flight in the morning and during the bombing the Southampton was hit, the bomb glancing off and not damaging her seriously, and there were casualties in the Edinburgh and the Mohawk. Royal Air Force fighter patrols took the air in Supermarine Spitfires and succeeded in making contact with the enemy. As a result of the subsequent combats and of anti-aircraft fire, four of the enemy machines were brought down. On the day following this raid there was the raid on British warships in Scapa Flow when the Iron Duke was damaged. On this occasion two German machines were shot down. There followed the attack on a British convoy by twelve German aeroplanes, seven of which were shot down.

These operations gave rise to a widespread belief that Germany was initiating a large-scale aerial offensive against British shipping. Whether such an offensive was contemplated at this time or not cannot be known, but at any rate the idea was not pursued. Subsequent attacks were desultory and were not made by large numbers of aircraft. They continued, however, to require constant vigilance on the part of the Coastal and Fighter Commands and of the Observer Corps. After the Firth of Forth raid a balloon barrage was established in that district. The Germans then turned their attention to the Shetlands and made a large number of small raids there. It was on November 13 that the raid occurred in which the first bomb to fall on British soil was dropped. It did no damage. On a subsequent raid the Germans were more successful and they succeeded in setting fire to a British seaplane lying at its moorings in the Shetlands.

The next step in the air war was the institution of extensive mine-laying operations from the air by the Germans. Whether only seaplanes, or both seaplanes and landplanes were used was not clear; but it was certain that the technique had been carefully studied and that mines suitable for laying in this way had been developed and put into large-scale production in Germany. The immediate response to this was the low-flying machine-gun raid on the seaplane base at Borkum by Royal Air Force long-range fighters. This was the first time long-range fighters had been mentioned in the official communiqués although machines of this type had actually been in service with the Royal Air Force since some time before the outbreak of war. The machines were extrapolations from the Bristol Blenheim and carried a sheaf of forward firing guns in place of the bomb load and had movable guns at the rear. Immediately after the Borkum raid there was the highly successful bombing raid by a strong formation of Vickers-Armstrongs Wellington aircraft on German warships near Heligoland. Hits were made but details of the damage done were not given.

After the mine-laying by air came the attacks on British fishing vessels by German aircraft. These aroused considerable indignation among fishermen and with good cause, for they were made in a ruth-

less manner and more than once crews trying to escape from their vessels were machine-gunned by the German aeroplanes. German communiqués dealing with this aspect of the war in the air reported that the vessels attacked were naval auxiliaries. Whether the Germans did in fact believe that some of these ships were being used for observation purposes to supplement the methods for detecting the approach of hostile aircraft to the shores of Great Britain is not certain. But in any event no attempt was made to ensure that attacks were confined to vessels that might have been performing a duty of this kind. On the contrary the attacks were completely indiscriminate, any small ship being bombed and fired on. In some cases, indeed, attacks were later made on lightships, some of which were sunk. Seven out of the eight men forming the crew of one of these lightships were killed. The problem of defending fishing vessels from this kind of attack is a difficult one, but it was immediately tackled and methods were devised which it was hoped would give a measure of protection.

We now reach the most interesting stage of the air operations of 1939, a stage which is likely to have its influence upon future events. This began on December 13 with the starting of a series of "security patrols" by Royal Air Force bombing aeroplanes in the region of the German air bases at Sylt, Norderney, and Borkum. It continued with the aerial combats near Heligoland on December 14 and 18, when both sides lost machines. To understand these "security patrols" it must first be recalled that the policy behind the air operations up to the end of 1939 had been essentially defensive. No bombing of enemy land objectives was allowed. Warships were therefore the only targets left for the attention of the bombing aeroplanes of the Royal Air Force, and warships, as became clear immediately, are extremely difficult targets to hit, both on account of their small projected area and their powers of movement.

The problem before the Air Staff, then, was this: To hamper enemy operations against the British Fleet and against British shipping in general, whether by means of bombs or mines, and to do so without attacking land targets such as seaplane bases or docks and harbours. It was an exceedingly difficult problem because the aeroplane is not a very flexible instrument and cannot be turned to many different tasks. It is best in the attack on the more vulnerable types of target. It is worst in the defence. Yet the more vulnerable kinds of target are all on land. They are fuel storage stations, armament factories, and so on. These were forbidden to the Royal Air Force, yet that Service was asked to prevent the sniping operations of the German Air Force against British shipping. The "security patrol" was the attempted solution to the problem, interspersed with bombing attacks on the German Fleet if that Fleet could be found when out of harbour.

There can be no doubt that the "security patrol" aroused misgivings among students of air warfare. It consisted of a continuous patrol maintained near the German seaplane bases and the attack by means of bombs of any seaplanes that could be seen preparing to take off from the water. It was a sort of offensive without giving

offence and was therefore a matter of great difficulty. It placed heavy bombing aeroplanes, whose primary duty is to lay their bombs and then to run for home, in an awkward position when they were required not to lay their bombs but to stand and fight. Thus it came about that the two aerial combats with which the year's air operations concluded were fought between formations of British bombing aeroplanes of the heavy, long-range type and German fighting aeroplanes.

On the first occasion the British machines did well. They used their movable, power-operated gun turrets to good advantage and succeeded in bringing down four German machines while they themselves lost only three. But on the second occasion the result was not so favourable. Twelve German fighters were brought down, among them six of the new Messerschmitt 110 twin-engined type, but seven Vickers-Armstrongs Wellingtons were lost and, in as much as the Wellington is a far more elaborate structure than the Messerschmitt and needs a larger trained crew to man it, the losses could not be regarded with equanimity. They gave rise to further discussions on the use of large bombing aeroplanes for defensive missions which demanded that they should stand and fight. The officers and men who formed the crews of the British machines behaved magnificently and fought with fine daring and skill. But it is inevitable that they should suffer considerable losses when faced by large formations of fighting machines. The method they used to counter the German fighters was that of maintaining a fairly close formation and then bringing cross fire to bear on the enemy from a number of gun turrets.

This encounter, like the previous encounters, gave evidence of the technical superiority of the British machines and of the courage and good training of their crews. But it did give rise to some doubt about the possibility of using the aeroplane satisfactorily on a sort of offensive-defensive operation of this kind. The opinion was expressed by many students of air war that the Royal Air Force should either be allowed to strike by means of bombing on the most suitable military targets, or else that it should be kept on the defensive and its resources husbanded.

The opening stages of the air war, looked at by and large, show a disinclination on the part of both sides to start bombing. They show an attempt by the Germans to use the air arm in order to damage British warships and to hamper shipping in general. They show an attempt by Britain to counter this use of the air arm by a curious mixture of offensive and defensive operations. In more detail they show a technical superiority in British aircraft over enemy ones, especially in the matter of the armament of bombing and reconnaissance machines.

OLIVER STEWART.

CHAPTER VIII.

AEROPLANES OPERATING AT SEA.

AEROPLANES which operate at sea are divided into two main classes: shore-based aeroplanes under the control of the Royal Air Force and carrier-borne aeroplanes of the Fleet Air Arm. Both these groups of aircraft are really doing similar work and they connect with each other. Actual types of aeroplanes used, however, are very different. The shore-based aircraft consist mainly of the machines belonging to the Royal Air Force Coastal Command and these comprise not only such aeroplanes as the Lockheed Hudson and Avro Anson, but also flying-boats like the Short Sunderland and Saunders-Roe Lerwick. It is the intention in this chapter to deal first with the ship-borne aircraft and then to turn to some of the Coastal Command machines.

FLEET AIR ARM.

Ship-borne aircraft have been passing through a period of change. Most important point is that, after it had been fairly generally accepted that the biplane was the only type of machine suitable for this work, the monoplane made its way into service. A secondary point is that machines were put into production for the Fleet Air Arm as specialist types and not as modifications of landplanes previously adopted for service in the Royal Air Force. The change from biplanes to monoplanes and from adapted machines to specialised machines is not yet complete; but it is proceeding fairly rapidly and it seems probable that within two or three years the Fleet Air Arm equipment will be entirely composed of specialised types.

ADAPTED TYPES.

In order to follow the course of events during the year under review, it is worth first noting some of the adapted types, for these have proved themselves to be satisfactory machines. There is the Hawker Osprey which is one of the very numerous adaptations of the Hawker Hart. It is a two-seat fleet fighter reconnaissance biplane with a Rolls-Royce Kestrel V 12-cylinder V-type liquid-cooled engine giving a normal output of 600 h.p. at 11,000 ft. and a maximum of 640 h.p. at 14,500 ft.

This machine was introduced into the Fleet Air Arm not only for working from aircraft carriers but also in seaplane form for catapulting. The undercarriage can be changed easily to convert the machine from deck-flying to catapult duties. In construction the

Osprey is largely founded on a framework of stainless steel. Steel is used both for the fuselage and for the wings. The fuselage framework is built of round tubes with squared ends and is assembled with flat-plate fittings, stainless steel ferrules, and hollow rivets. The wings are fabric covered. The wing span is 37 ft. and the lower plane is of slightly smaller span than the upper. As in all deck-flying machines the wings are made to fold and when they are back the width of the machine is reduced to 15 ft. 7½ ins.

In performance the Osprey was extremely satisfactory at the time it was introduced although to-day the figures do not seem so impressive. Its speed at 6,560 ft. is 161 m.p.h. and at 9,840 ft. 169 m.p.h. The best speed is secured at 12,130 ft. where it is 176 m.p.h.

It is convenient to turn from the Osprey to another Hawker machine which came into the Fleet Air Arm through the same channels. This is the Hawker Nimrod. It is a single-seat fleet fighter and it is an adaptation of the Hawker Fury. This machine also has the Rolls-Royce Kestrel engine. Although the Nimrod is slightly larger than the Fury—the wing span is 33 ft. 6¼ ins. against the Fury's 30 ft.—the performance is not much inferior. The top speed of the Fury is 223 m.p.h. which is secured at 16,400 ft. while the top speed of the Nimrod is 181 m.p.h. which is secured at 13,120 ft. The Nimrod carries much more extensive equipment than the Fury and it can be used for catapulting. The armament consists of two Vickers guns firing through the disc swept by the airscrew. The aeroplane's equipment includes oxygen apparatus, wireless, marine salvage and hoisting gear, electrical equipment for lighting and heating and navigation lights. The construction of the machine follows the lines of the Osprey.

A similar process of adaptation occurred in the Gloster Gladiator, the Sea Gladiator following the lines of the land machine and having the same order of performance. And now we may turn to the specialised types, beginning with the older ones and continuing to the new and extremely interesting specialised Fleet Air Arm monoplanes.

Two torpedo-spotter-reconnaissance biplanes must first be mentioned, the Fairey Swordfish and the Blackburn Shark. These aeroplanes are still in use in the Fleet Air Arm, but it is worth remarking that all aeroplanes in service undergo from time to time modifications which improve their performance or their operational qualities and that it is not possible to refer to such improvements here. The consequence is that the details given will refer to those machines at the time when they were coming into use. Although some of the figures do not now apply, the general qualities of the machines can be inferred from them.

THE FAIREY SWORDFISH TORPEDO-SPOTTER-RECONNAISSANCE BIPLANE.

The structure of this machine is metal with fabric covering. It is a braced biplane powered by a Bristol Pegasus engine driving a Fairey metal airscrew. The wing span is 45 ft. 6 ins., the length with the wheeled undercarriage for deck flying is 36 ft. 4 ins., and with

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floats 40 ft. 11 ins. When empty this machine weighs 4,195 lb. and the useful load is 1,900 lb.

The top speed is 154 miles an hour and the duration 5·7 hours. Normally the Swordfish carries a crew of three ; but when it is used as a torpedo carrier, only two are taken. The prototype of the Swordfish was built in 1936 and production has been completed.

THE BLACKBURN SHARK TORPEDO-SPOTTER-RECONNAISSANCE BIPLANE.

The structure is metal, stainless steel being used for the built-up spars. The ribs and tubular drag struts are of duralumin with steel tie-rod bracing. The wings are fabric covered. The fuselage, an Alclad monocoque, is made water-tight to act as flotation gear if the machine alights on the sea. The engine is an Armstrong Siddeley Tiger fourteen cylinder radial. The wing span is 46 ft., the length as a deck-flying machine with the wheel undercarriage is 35 ft. 2½ ins.

Top speed is 152·5 m.p.h. and the cruising range is 550 miles. Standardised as the torpedo-spotter-reconnaissance aeroplane of the Fleet Air Arm, the Shark was built in prototype form in 1934 and production has been completed.

Before passing to a particularly interesting amphibian, it is worth bearing in mind that the aeroplanes which are made to carry torpedoes must have specially devised undercarriages. There can be no strutting between the sides of the undercarriage and none of the normal cross-bracing because the torpedo cannot be slung far enough back to clear it. The consequence is that the torpedo machine must have a divided undercarriage in which each side is complete structurally. In itself the problem of providing such an undercarriage is not difficult, but when it is combined with the problem of arranging for the wings to fold and for the carriage of very large quantities of equipment, it becomes exceedingly complex. Air pilots often complain of the poor aerodynamic qualities of torpedo aircraft and they have some justification ; but a study of the design difficulties which have to be faced in providing for the special needs of these machines will indicate why clean lines and good streamlining must sometimes be sacrificed. I now turn to an amphibian used by the Fleet Air Arm, the Supermarine Walrus.

THE SUPERMARINE WALRUS AMPHIBIAN FLYING-BOAT.

This is a most interesting machine which has already been described on many occasions but which must be recalled in the present survey if the new types to which we shall turn in a moment are to be seen in their true perspective.

The Walrus is a biplane amphibian flying-boat carrying three people and used for general purposes by the Fleet Air Arm. It is a single bay biplane and the wheels retract upwards and outwards until they are housed in recesses in the wings. The machine has a single Bristol Pegasus engine, a nine-cylinder radial, mounted in its own nacelle between the planes but nearer to the top plane than the

bottom. The wing span is 45 ft. 10 ins. and the length 37 ft. 7 ins. The maximum speed is 135 m.p.h.

The wings of this machine are designed to fold to aid stowage in carriers and the structure is arranged so that the Walrus can be catapulted. Although it looks somewhat clumsy, this flying-boat amphibian is actually handy on the controls, and it has performed much useful work especially as a catapult machine.

The structure makes use of stainless steel for the wing spars, and there are spruce and plywood ribs, a plywood leading edge, and fabric covering. The hull is of anodically-treated duralumin with flat sides and a V bottom.

Some general view of the preliminary development of Fleet Air Arm aircraft has now been given, and it must be borne in mind as a background if the importance of the more recent steps is to be appreciated. When we come to the latest types of Fleet Air Arm aeroplanes they may not seem so remarkable when compared with ordinary landplanes designed without any of the restrictions applying to ship-borne machines; but when they are seen in relation to the Swordfish, the Shark, and the earlier Osprey and Nimrod, the magnitude of the advance which they represent will be appreciated.

Most noticeable feature of the change is the swing over from biplane to monoplane. The reason that it was once supposed that the biplane would always remain the deck-flying type, and would never be replaced in this duty by the monoplane, is that the monoplane, to carry the same load, must, if it is to gain the speed and other advantages expected from the formula, be more highly loaded than the biplane. High wing loading means high landing speed and—other things being equal—high take-off speed and a long take-off run. Even when more highly loaded the monoplane must be of greater wing span than the biplane. The monoplane, therefore, would be less handy for landing and taking off and less easy to stow. It seemed that the biplane was the type better suited to give the slow flying qualities and the good control at low speeds which are essential for deck-flying operations. But it was seen that the ordinary land machines were gaining largely in performance by swinging over to the monoplane, and in all these changes performance is the dominant factor. Prove that performance will benefit from a change and the change will be made no matter what the incidental difficulties.

So it came about that a study of the possibilities of using the monoplane for ship-borne aircraft was undertaken. It included the methods to be used for folding the wings, for here again there were special problems. The monoplane, if it is to have the advantages expected of it, must be aerodynamically "clean" and this entails the retractable undercarriage. But the retractable undercarriage complicates the whole mechanism of wing folding and new methods had to be devised. How they were devised and with what results will appear in the following descriptions of the latest types of ship-borne aircraft used by the Fleet Air Arm.

The machines to be dealt with are both founded on the same basic design. They are the Blackburn Skua fleet-fighter dive-bomber and

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the Blackburn Roc two-seat fleet-fighter. Both are monoplanes with all modern devices such as retractable undercarriages and variable pitch airscrews. Structurally the description of the Skua applies to both types, but in equipment and arrangement they differ in many points.

THE BLACKBURN SKUA FLEET-FIGHTER DIVE-BOMBER.

This is not only the first monoplane to be adopted by the Royal Navy for Fleet Air Arm use, but it is also the first machine designed for its special duties ; that is fleet-fighting and dive-bombing. In conformity with the practice in the other machines, attention will be concentrated upon the Mark I Skua. This has the Bristol Perseus XII nine-cylinder sleeve-valve radial engine which gives 830 h.p. for the take-off and is rated at 745 h.p. at 2,400 revolutions per minute at 6,500 ft.

The Skua is a taper wing monoplane with a special form of wing flap designed to aid deck work. This flap is of a form which enables it to be used also as an air brake, to limit speed for dive-bombing, a matter of importance when dealing with " clean " aircraft which, in the dive, may work up to undesirably high speeds. It is claimed for this flap that when it is lowered the trim of the aeroplane remains virtually unaffected.

In common with other Fleet Air Arm machines the Skua is arranged so that it is given a degree of buoyancy as a partial safeguard for the crew in the event of the machine being forced to alight on the water. The fuselage and wings are divided into a number of water-tight compartments and the cockpit is water-tight up to the coaming. Over this cockpit there is a long transparent cover and the pilot sits in the centre section, so that he enjoys a good outlook in all directions except straight down. The observer-gunner, who has a movable machine gun, is accommodated well behind the wings and there is a hinged hood enclosing the aft end of the cockpit.

In construction the Skua is of special interest. The fuselage is a metal monocoque made in two parts, the joint being just forward of the fin. The plating is flush riveted. The wings are in three sections, the centre-section and two outer sections. Near the wing roots there are the circular recesses for the undercarriage wheels and the troughs for the struts. On the underside of the wings there are also the troughs for the wing flaps which stow flush when they are not in use, and so set up no additional drag.

The undercarriage retracts outwards and upwards and the wheels have intermediate pressure tyres and wheel brakes. The shock-absorbing units are of the oleo-pneumatic type. The tail wheel of the Skua does not retract, but it is retained in a fore and aft line by a self-centring device in the strut. The controls are operated by the usual system of cables, pulleys, and levers. There are trimming tabs on elevator and rudder and they are set by means of two handwheels mounted on the port side of the cockpit.

Fuel is carried in the fuselage, the tanks being in the sides of the

cockpit with a small reserve tank in the front water-tight compartment. Each tank has an electrical contents gauge. Oil is carried in a 12-gallon tank mounted immediately in front of the pilot's instrument panel. Undercarriage and flaps are worked hydraulically, and there is an engine-driven pump in the system, a fluid reservoir, main and emergency selector valves, and a hand pump which can be used if the engine-drive pump fails. There is in addition to the hydraulic system a pneumatic system in the Skua. This is for the wheel braking, and it includes an engine-driven compressor, an air reservoir, an oil reservoir and trap, and an air filter and pressure gauge.

We now come to the performance of the Skua. Here it must once more be emphasised that, this machine being now in use in the Fleet Air Arm and still in production at the time of writing, the amount of information which it is permissible to give on performance is limited.

The Skua has a wing span of 46 ft. 2 ins. and a length of 35 ft. 7 ins. while the wing area is 312 sq. ft. The top speed is 225 miles an hour at 6,500 ft. and the cruising speed is 187 m.p.h. Service ceiling is 20,200 ft. For recognition purposes the most notable feature of the Skua is the forward position of fin and rudder. The fin and rudder are disposed almost entirely above the fuselage and are arranged well in front of the tail plane.

THE BLACKBURN ROC TWO-SEAT FLEET-FIGHTER.

In fighter form the Skua is called the Roc. It then carries a Boulton Paul power-operated gun turret at the rear, and is readily distinguishable by this feature from the Skua. The weight empty is 5,490 lb. and the top speed is the same as for the Skua, that is, 225 m.p.h. at 6,500 ft. At sea-level the maximum speed is 204 m.p.h.

This aeroplane in another slightly modified form is used as a drogue target tower. In this form its general characteristics remain the same.

It will be noticed that the aeroplanes of the Fleet Air Arm were in a state of transition at the time of the outbreak of war on September 3, 1939. They were changing over from the biplane form, which had been used without exception in the past, to the newer, faster, but in some ways more complicated monoplane. The new monoplanes were in production and in service, but large numbers of biplanes also remained in service. In the future there can be no doubt that the monoplane will continue to be used and developed for deck flying. It will almost certainly make its way into the catapult classes and eventually be used for all fleet work.

It is the most notable change since the Fleet Air Arm began. It has enabled a considerable step up to be made in the matter of the performance of these machines. At the same time it is to be observed that performance for the best Fleet Air Arm machines falls below that of comparable land-based types. The reason is clear if the extent and complexity of the equipment which the Fleet Air Arm

machines must carry are borne in mind. These aeroplanes carry more varied equipment for their size than any other types and they have to have special features, such as the water-tight compartments and cockpits to give them buoyancy in case of an emergency alighting. It is not to be expected, therefore, however swiftly the development of Fleet Air Arm machines goes forward, that they will ever be able to compete in sheer performance, in such things as speed and climb, with the machines which need none of the special equipment.

It is not impossible, however, that specialised forms of deck-flying aeroplanes will come into existence which will show more marked divergence from existing land machines and will be, for their own particular task, far better than any adapted land machines could be. The Skua prototype was only built in 1937, so that no time has been lost in getting it into service. A similar rate of advance may see the machines of the Fleet Air Arm undergoing further and equally drastic modifications.

Deck-borne aircraft have always had a special interest of their own both from the design and constructional points of view; but this is a side of aeronautical work which has tended to be relegated into the background. Now there are satisfactory signs that it is being given more attention.

GENERAL RECONNAISSANCE SQUADRONS OF THE ROYAL AIR FORCE.

We may now turn to the aircraft which are in some senses more naval than the aircraft of the Fleet Air Arm, the machines of the Coastal Command of the Royal Air Force. These include the flying-boats, which are gradually becoming ships that fly rather than aeroplanes that float. They are taking on the characteristics and qualities of surface vessels in a more and more marked degree as their size increases. First among them to be treated will be the extremely interesting Short Sunderland, a flying-boat developed from the Empire machines originally built at the order of Imperial Airways for the operation of the Empire air services.

THE SHORT SUNDERLAND OVERSEA RECONNAISSANCE FLYING-BOAT.

This is a four-engined machine made entirely of metal and powered with Bristol Pegasus XXII engines. From the time of the outbreak of war the Short Sunderlands were engaged on convoy work and submarine patrol, and they were frequently out for ten-hour periods at a stretch. The limits of their capacity would enable them to stay out even longer than this if necessary.

A high-wing monoplane, with a single-step hull, though there is a knife edge end to the bottom of the hull which makes it appear when the machine is in the air as if it had a two-step hull. The wings are cantilever so that there is no external bracing to them. Wing tip floats are provided to give the machine stability when on the water.

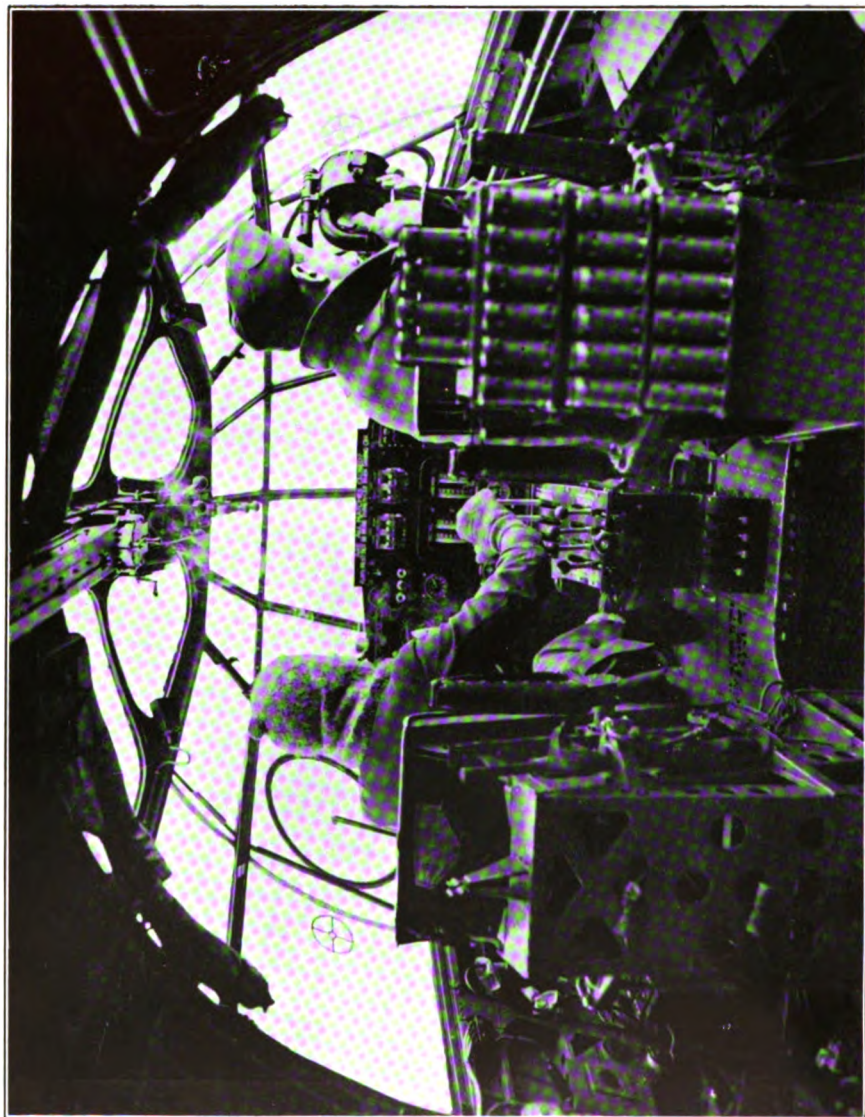
The general arrangement of the hull of the Sunderland is in two



SUNDERLAND FLYING-BOAT OF THE COASTAL COMMAND.

Showing gun turret in the tail.

(Official R.A.F. photograph.)



SUNDERLAND FLYING-BOAT OF THE COASTAL COMMAND.

*The control cabin, showing pilot in port seat, second pilot, using Aldi's lamp, in starboard seat.
(Official R.A.F. photograph.)*

decks, the upper comprising the control cabin in the nose, the navigator's compartment immediately behind, where there is a chart table and a duplicate set of instruments, the wireless operator's room, the fitter's compartment where there are such instruments as fuel gauges and oil temperature gauges, and, aft of a separate bulkhead, the two side gunners' positions.

On the lower deck there is in the extreme nose a gun turret which is movable when the flying-boat is being brought up to moorings to allow a man with a boathook to be stationed there, a ward room, crew's quarters where the bomb racks also run in when they are not in use, and a catwalk leading to the rear-gun turret in the extreme tail. The normal crew for this machine when on convoy work is ten men.

In size the Sunderland has a span of 112 ft. 9½ ins. and a length of 85 ft. 4 ins. The wing area is 1,487 sq. ft. and the performance gives a top speed of 210 miles an hour at 6,250 ft. The normal all-up weight of this machine is 45,700 lb. The machine has a smooth external surface, with countersunk rivets and joggled lap joints. The wings are fitted with special flaps to aid in the take-off and the landing, and there are controllable pitch airscrews.

Extremely good service has been given by these large flying-boats, and it is obviously a type of machine that must be developed in the future. A new type which was coming into service with the Royal Air Force at the beginning of 1940 is the Saunders-Roe Lerwick. At the time of writing, this machine is still on the part publication list and in consequence little may be said about it.

It may be mentioned, however, that it is a monoplane flying-boat of very clean lines, and that it is powered with two Hercules sleeve-valve engines. The Hercules has fourteen cylinders arranged in two rows and gives nearly 1,300 h.p. for the take-off. In consequence of the large amount of power available in this machine and its clean lines, it is obvious that its performance must be very high with an excellent top speed, but beyond that it is impossible at the time of writing to go.

THE AVRO ANSON GENERAL RECONNAISSANCE LANDPLANE.

This has been one of the hardest-worked aeroplanes in the Royal Air Force. It was one of the first monoplanes to come into service in large quantities, and it is used both for training and also for general reconnaissance work by the Coastal Command. Many of the attacks on submarines which were made during the early stages of the war were made by Avro Ansons.

The machine is a low-wing monoplane powered by two Siddeley Cheetah IX engines, each of 310 h.p. The normal crew is three, and they are accommodated in an enclosed cabin of roomy size which gives easy access to the various crew stations. The pilot's seat is in the extreme nose on the left-hand side. The bomb-aimer's position is also in the extreme nose, but on the right-hand side.

The rear-gun station is equipped with an Armstrong Whitworth rotating gun turret. The undercarriage of the machine retracts

when it is in flight. The performance gives a top speed of about 190 miles an hour at 7,000 ft. The wing span is 56 ft. 6 ins. and the height 13 ft. 1 in. The gross weight is 7,612 lb.

THE BRISTOL BEAUFORT.

Among the latest types of aeroplane designed for general reconnaissance and other work of which mention may be made, the Bristol Beaufort is one of the most important. Like the Lerwick it is fitted with sleeve-valve engines, but they are slightly smaller ones. It is a mid-wing monoplane with all the usual modern equipment such as retractable undercarriage and variable pitch airscrews, and it has a multi-gun turret in the rear. It can be used for a large variety of duties over and above general reconnaissance, among them being bombing, long-range fighting, and torpedo dropping. No figures may be given as to the performance of this aeroplane, but its relative powers can be judged when it is said that the top speed is higher than that of the Bristol Blenheim bomber, which is capable of 295 m.p.h.

The engines of the Beaufort are the Bristol Taurus, which is a 14-cylinder air-cooled radial. The engines are housed in special low drag cowlings with "gills" at their trailing edge, which enable the flow of cooling air to be controlled by the pilot.

THE LOCKHEED HUDSON GENERAL RECONNAISSANCE AEROPLANE.

This machine was originally introduced into the Royal Air Force for training purposes. It is really an adaptation of the Lockheed commercial aeroplane which has gained great success both in this country and in the United States.

It is an all-metal low-wing monoplane and can be fitted with a variety of different engines, among them the Pratt and Whitney Hornet, each of 800 h.p., the Wright Cyclone, each of 650 h.p. or 820 h.p. The machine has a span of 65 ft. 6 ins. and a length of 44 ft. 3.82 ins. The maximum speed in the commercial form is 246 m.p.h. at 7,000 ft. This machine has proved extremely valuable for Coastal Command work and it has been used for many attacks on enemy submarines.

OLIVER STEWART.

REFERENCE SECTION

Comprising

**DIMENSIONS AND PARTICULARS OF BRITISH AND
FOREIGN WARSHIPS**

BRITISH AND FOREIGN AIRCRAFT TYPES

BRITISH AND FOREIGN ORDNANCE TABLES

MISCELLANEOUS

**DIMENSIONS AND PARTICULARS OF
BRITISH AND FOREIGN WARSHIPS**

LIST OF BRITISH AND FOREIGN SHIPS.

Warships are arranged in classes, except in some instances where they are arranged alphabetically. The following abbreviations are used throughout the List:—

a.g.b. Armoured gunboat.	s.c. Seaplane carrier.
g.b. Gunboat.	H.N.s. Harvey nickel steel.
b. Battleship.	H.s. Harveyised or similar hard-faced steel.
b.c. Battle cruiser.	K.s. Krupp steel.
l.cr. Light cruiser.	t. Speed and H.P. at trials (in speed and H.P. columns).
c.d.s. Coast-defence ship.	b.p. or p.p. Length of ship between perpendiculars.
M.Cr. Minelaying cruiser.	
cr. Cruiser.	
A.A. or H.A. Anti-aircraft guns.	
A.C. Aircraft carrier.	
A.T. Aircraft tender.	
L. Light guns under 15 cwt., including boats' guns.	
M. Machine guns.	

Torpedo Tubes: (D.) = double; (T.) = triple; (Q.) = quadruple; (sub) = submerged; a.w. = above water.

The following abbreviations are used to distinguish the various types of boilers:—

W.T. Water-tube boilers, where the type is not known.	My. Myabara.
B. Belleville.	Nic. Niclausse.
Bl. Blechynden.	Pen. Penhoet.
B. & W. Babcock and Wilcox.	T. Thornycroft.
D'A. D'Allest.	T.S. Thornycroft-Schulz.
	Y. Yarrow.

The following abbreviations distinguish types of machinery:—

P.T. Parsons turbines.	tur. Turbines, where the type is not known.
C.T. Curtis turbines.	recip. Reciprocating engines.
B.C.T. Brown-Curtis turbines.	I.C. Internal combustion engines.
(G.) Geared turbines.	W.G.T. Westinghouse geared turbines.

In later pages (marked P1, P2, etc., towards the end of the volume) plans of most of the ships appear.

Unless otherwise stated, the displacements are Standard displacements (*i.e.* excluding fuel and reserve feed water).

GREAT BRITAIN.—Battleships and Battle Cruisers.

Class	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Normal Draught.	Horse-Power. Type of Boilers.	Where Built.	Makers of Engines. Type of Machinery.	Date of Launch.	Cost.	Armour.					Armament.		Speed.	Complement (Var.).
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Guns.	Torpedo Tubes.		
		tons.	ft.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	Heavy Guns.	Second-ary.		knots.	
b.	1 Battleship	40,000	620½	102 0	30 0	45,000	J. Brown Fairfield	J. Brown Fairfield	Bdg.	1925	14	6½	..	..	16-9	9 16-in., 12 6-in., 4 3-pr. A.A.; 4 3-pr., 3 2-pr. mult. p.p.; 5 m.; 11 L.; 2 2-pr. Pom Poms in Nelson.	2	23	1360
b.	1 Battleship						Vickers (Walker)	Vickers (Walker)	Bdg.										
b.	Lion						Cammell	Cammell	Bdg.										
b.	Temeraire						Laird	Laird	Bdg.										
b.	King George V.	35,000	620½	101 4	29 0	40,000	Vickers (Walker)	Vickers (Walker)	1939	1916	13-4	4-1	6	6-4	11	6	2	23½	1104
b.	Prince of Wales	35,000					Cammell	Cammell	1939										
b.	Duke of York	35,000					J. Brown	J. Brown	1939										
b.	Beatty	35,000					Fairfield	Fairfield	Bdg.										
b.	Jellicoe	35,000	620½	101 5	29 0	40,000	Swan Hunter	Wallsend	Bdg.	1915	13-4	4-1	6	6-4	11	6	2	23	1104
b.	Nelson	33,950					N'w'style-on-Tyne	B.C.T.(G.)	1925										
b.	Rodney	33,900					Birkenhead	Cammell	1925										
b.	Ramillies	29,150					Dalmuir	Beardmore, P.T.	1916										
b.	Resolution	29,150	620½	101 4	29 0	40,000	Jarrow	Palmer	1915	2,449,680	13-4	4-1	6	6-4	11	6	2	23	1104
b.	Revenge	29,150	625½	101 5	29 0	40,000	Barrow	Vickers	1915	2,406,368									
b.	Royal Sovereign	29,150	620½	101 6	29 0	40,000	Portsmouth	Parsons	1915	2,570,504									
b.	Royal Sovereign	29,150	620½	101 6	29 0	40,000	Portsmouth	Parsons	1915	2,570,504									

b. Malaya†	31,100,640‡	104 0 31 3	75,000 B. & W.	Walker . WallSEND . P.T.	1915 1916 2,945,709	13-6	3-1	6	4-2	11	6	8 15-in., 12 6-in., 8 4-in. A.A., 4 3-pr., 2 2-pr., 5 M.; 11 L.; 1 catapult, 1 aircraft.	25||	1136
b. Valiant§	31,100,639‡	104 † 0 31 3	75,000 B. & W.	Govan . Fairfield . B.C.T.	1914 1916 2,537,087	13-6	3-1	6	4-2	11	6	8 15-in., 12 6-in., 4 3-pr., 4 4-in. A.A.; 2 2-pr. Pom Poms; 5 M.; 11 L.; 1 catapult, 1 aircraft.	25||	1136
b. Queen Elizabeth§	31,100,644‡	104 † 0 31 3	75,000 B. & W.	Portsmouth WallSEND . P.T.	1913 1915 2,473,103	13-4	3-1	6	4-2	11	6	8 15-in., 12 6-in., 4 3-pr., 2 2-pr. Pom Poms, 8 4-in. A.A.; 5 M.; 11 L.	25||	1187
b. Barham .	31,100,643‡	104 0 31 3	75,000 Y.	Clydebank J. Brown B.C.T.	1914 1915 2,470,113	13-4	3-1	6	4-2	11	6	8 15-in., 12 6-in., 8 4-in. A.A., 4 3-pr.; 5 M.; 11 L.; 1 catapult, 1 aircraft	25||	1126
b. Warspite .	30,600,644‡	104 † 0 28 2	75,000 Y.	Devonport Hawthorn P.T.	1913 1915 2,518,360	13-6	3-1	6	4-2	11	6	8 15-in., 8 6-in., 4 3-pr., 8 4-in. A.A.; 5 M.; 11 L.; 1 catapult, 1 aircraft.	25 ||	1130
b.c. Hood .	42,100,860‡	105 3 28 6	144,000	Clydebank J. Brown . B.C.T. (G.)	1918 1920 5,698,946	12-6	3-1	7-5	5-4	11	(a)	8 15-in., 10 5·5-in., 8 4-in. A.A., 4 3-pr., 2 2-pr.; 5 M.; 11 L.	4 31	1341
b.c. Renown* .	32,000,794‡	102 4 102 6	112,000 B. & W.	Govan . Fairfield . B.C.T.	1916 1916 3,117,204	9-3 E.C.	2	6-3	4-3	11-7 K.C.	6	6 15-in., Repulse; 12 4-in., 4 3-pr.; 5 M.; 11 L.; (emb.) catapult and 4 aircraft.	31·5||	1188
b.c. Repulse* .				Clydebank J. Brown . B.C.T.	1916 1916 2,829,087									

* Repulse reconstructed 1936. Renown modernised (1939), including re-engining.

† Built at the charge of the Federated Malay States.

‡ In hand for reconstruction similar to Warspite.

† Repulse has 8 a.w. tubes in addition.
|| Speed without bulges.

(a) Guns are in abtides of 1-in. H.T. plating

‡ Over rubbers.

GREAT BRITAIN.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Extreme breadth under water over rubbers.	Draught.	Horse-Power. Type of Boiler.	Where Built.	Maker of Engines. Type of Machinery.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Complement (War).
												Belt.	Deck.	Guns.	Torpedo Tubes.		
A.C.	Indefatigable	23,000	786½	90 6 22 over rubbers	94 9 22 10	111,000	J. Brown	J. Brown	Bldg.	1938	£	in.	in.	4-5-in. guns 16 4-5-in. guns; 20 smaller	—	knots.	..
A.C.	Implacable						Fairfield	Fairfield	Bldg.								
A.C.	Illustrious						Vickers (Barrow)	Vickers (Barrow)	Bldg.								
A.C.	Victorious						Vickers (Walker)	Vickers WallSEND	1939								
A.C.	Formidable						Harland & Wolff (Belfast)	Harland & Wolff	1939								
A.C.	Indomitable	22,000	800	94 9 22 10	94 9 22 10	102,000	Vickers (Barrow)	Vickers	Bldg.	1937	3,429,593	..	..	16 4-5 in. guns; 4 3-pr., 70 aircraft	—	30½	..
A.C.	Ark Royal						Cammell Laird	P.T.(G.)	1937								
A.C.	Argus II						Dalmuir.	Beardmore P.T.	1917								
A.C.	Glorious	22,500	786½	90 6 22 over rubbers	94 9 22 10	90,000	Belfast	Harland & Wolff P.T.(G.)	1916	1930	2,119,066 (a) 2,137,374 (b)	3	9-7	16 4-7-in. H.A., 4 3-pr., 3 2-pr. Pom Poms, 4 M., 10 L., 48 aircraft	—	30½	770

A.C.	Eagle, ex-Almirante Cochrane.	22,600	667½	105	2	21	11	50,000	Walker Y.	J. Brown B.C.T.	1918 As a battle-ship.	1924 As an aircraft carrier.	4,211,576	..	..	9 6-in., 4 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 32 smaller, 20 aircraft	24	753
A.C.	Furious	22,450	786½	90½	1	21	6	90,000	Walker (Armstrong) Y.	Wallsend Eng'n'g Co. B.C.T.(G.)	1916 As a cruiser.	1925 As an aircraft carrier.	2,436,603(a)	3	7	10 5.5-in., 3 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 46 smaller, 83 aircraft	31	728
A.C.	Hermes	10,850	600	70	3	18	7	40,000	Elswick	Parsons Co. P.T.(G.)	1919	1924	2,030,263†	..	..	6 5.5-in., 3 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 4 M., 16 L., 15 aircraft	25	551
S.C.	Pegasus*	6900	366	50	10	17	6	3000	Blyth	Blyth S. B. Co. recip. Sydney	1914	1914	Purchased under construction	..	..	4 M., 10 L., 1 catapult	11	139
S.C.	Albatross¶	4800	443½	61	0	15	6	12,000	Cookatoo Island (a)		1928	1929	266,796	..	..	4 4.7-in. A.A., 4 2-pr. Pom Poms, 4 3-pr., 4 M.; 20 L.; 9 sea-planes	21	350

* Used for experimental work.

¶ Used as a training carrier.

(a) First cost of ship as a cruiser.

‡ Estimated cost including guns.

§ Transferred from Royal Australian Navy.

(b) Estimated cost of reconstruction as an aircraft carrier.

§ Over rubbers: 120 ft. over palisades.

¶ Transferred from Royal Australian Navy.

(b) Estimated cost of reconstruction as an aircraft carrier.

GREAT BRITAIN.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)		Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost. £	Armour.			Armament.		Speed.	Complement (War).
				ft. ins.	ft. ins.								Belt.	Deck.	Gun Position.	Guns.	Torpedo Tubes.		
Norfolk Class	Dorsetshire .	9975	633	66 0	17 0	080,000 (G.)	{ Ports-month Fairfield	{ Cammell Laird Fairfield .	{ 1929	{ 1930	{ 2,101,951	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 m., 10 L., 1 aircraft, 1 catapult.	{ 8 21" (Q.)	{ knots.	{ 710		
	Norfolk .	9925																	
York Class	Exeter .	8390	575	58 0	17 0	80,000 (G.)	{ Devonport Palmer's	{ Parsons . Palmer's .	{ 1929	{ 1931	{ 1,837,415*	{ in.	{ in.	{ 6 8-in., 4 4-in. A.A., 4 3-pr., 6 m., 8 L., 2 aircraft in Exeter, 1 aircraft in York.	{ 6 21" (Q.)	{ 32	{ 630		
	York .	8250																	
London Class	Shropshire .	9830	633	66 0	17 0	80,000 (G.)	{ Dalmuir Hawthorn Leslie .	{ Beardmore Hawthorn Leslie .	{ 1928	{ 1929	{ 1,975,800†	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., 4 3-pr., 4 m., 10 L., 1 aircraft, 1 catapult.	{ 8 21" (Q.)	{ 32½	{ 685		
	Sussex .	9830																	
London Class	Devonshire .	9850	630	66 0	17 0	80,000 (G.)	{ Devonport Ports-month	{ Vickers . Fairfield .	{ 1927	{ 1929	{ 2,007,275	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., 4 3-pr., 4 m., 10 L., 1 aircraft, 1 catapult.	{ 8 21" (Q.)	{ 32½	{ 685		
	London .	9850																	
Kent Class	Suffolk .						{ Ports-month	{ Parsons .	{ 1926	{ 1928	{ 2,180,240†	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., 4 3-pr., 4 2-pr. Pom Poms, 4 m., 8 L., 3 aircraft	{ ..	{ 31½	{ 700		
	Berwick .																		
Kent Class	Cornwall .	10,000	630	68 4	16 7	80,000 (G.)	{ Devonport Barrow .	{ Beardmore Vickers	{ 1926	{ 1928	{ 2,252,110*	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., 4 3-pr., 4 2-pr. Pom Poms, 4 m., 8 L., 3 aircraft	{ ..	{ 31½	{ 700		
	Cumberland .																		
Improved Southampton Class	Kent .					Y.	{ Chatham	{ Hawthorn	{ 1926	{ 1928	{ 2,980,821*	{ in.	{ in.	{ 8 8-in., 8 4-in. A.A., Kent, 1 aircraft.	{ 6	{ 32½	{ ..		
	Edinburgh .																		
Improved Southampton Class		10,000	613½	63 4	17 3	80,000 (G.T.)	{ Swan Hunter Harland & Wolff	{ Wallsend . Harland & Wolff	{ 1938	{ 1939	{ 2,162,504†	{ in.	{ in.	{ 12 6-in., 12 4-in. A.A., 20 smaller, 3 aircraft, 1 catapult.	{ 6	{ 32½	{ ..		
	Belfast .																		

GREAT BRITAIN.—Cruisers, &c.—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Traught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines	Date of Launch.	Date of Completion.	Cost.	Armour.	Armament.	Speed.	Complement (War).
E Class	Emerald	7550	570	54 7	16 8	80,000 (G.)	Armstrong	Wallsend.	1920	1926	£ 1,617,120	In. 3-1½	7 6-in., 3 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L., 1 aircraft.	33	577
	Enterprise	7580	570	54 9	16 8	B.C. (G.) Y.	J. Brown	J. Brown	1919	1926	1,690,658*	1	16 21"	33	577
D Class	Diomedé	4850	471½	46 3	14 3	40,000 (G.) Y.	Vickers	Vickers	1919	1922	1,146,904	3	6 6-in., 3 4-in. A.A., 2 M., 4 3-pr., 8 L., 2 2-pr. Pom Poms.	29	460
	Despatch	4850	472½	46 9	14 3	(G.) Y.	Fairfield	Fairfield	1919	1922	1,016,870	—	12 21"	29	460
Hawkins Class	Durban	9550	605	65 1	17 3	65,000 (G.) Y.	Scotts	Scotts	1920	1924	2,035,915†	3	9 6-in., 4 4-in. A.A., 4 3-pr., 2 2-pr., 2 M., 8 L., 4 3-pr., 2 M., 8 L.	715	715
	Dunedin	9550	605	65 1	17 3	65,000 (G.) Y.	Armstrong	Armstrong	1917	1919	1,599,741	—	4 4-pr. H.A., 4 3-pr., 2 2-pr., 2 M., 8 L.	715	715
Carlisle Class	Delhi	4200	451½	43 10	14 1	40,000 (G.) Y.	Palmer	Palmer	1918	1919	689,216	3	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L.	29	415
	Danaë	4200	451½	43 10	14 1	40,000 (G.) Y.	Scotts	Scotts	1918	1919	689,216	—	8 4-in. A.A., 10 smaller.	29	415
Hawkins Class	Dauntless	9800	605	65 1	17 3	65,000 (G.) Y.	Armstrong	Armstrong	1917	1919	1,599,741	3	9 6-in., 4 4-in. A.A., 4 3-pr., 2 2-pr., 2 M., 8 L., 4 3-pr., 2 M., 8 L.	715	715
	Dragon	9800	605	65 1	17 3	65,000 (G.) Y.	Palmer	Palmer	1917	1919	1,599,741	—	4 4-pr. H.A., 4 3-pr., 2 2-pr., 2 M., 8 L.	715	715
Carlisle Class	Effingham	9860	605	65 1	17 3	65,000 (G.) Y.	Portsmouth	Portsmouth	1921	1925	2,138,999	3	9 6-in., 4 4-in. A.A., 4 3-pr., 2 2-pr., 2 M., 8 L., 4 3-pr., 2 M., 8 L.	715	715
	Frobisher	9860	605	65 1	17 3	65,000 (G.) Y.	Devonport	Devonport	1920	1924	2,035,915†	3	9 6-in., 4 4-in. A.A., 4 3-pr., 2 2-pr., 2 M., 8 L., 4 3-pr., 2 M., 8 L.	715	715
Carlisle Class	Hawkins	9800	605	65 1	17 3	65,000 (G.) Y.	Chatham	Chatham	1917	1919	1,599,741	—	4 4-pr. H.A., 4 3-pr., 2 2-pr., 2 M., 8 L.	715	715
	Cairo	9800	605	65 1	17 3	65,000 (G.) Y.	Chatham	Chatham	1917	1919	1,599,741	—	4 4-pr. H.A., 4 3-pr., 2 2-pr., 2 M., 8 L.	715	715
Carlisle Class	Calcutta	4200	451½	43 10	14 1	40,000 (G.) Y.	Cammell	Cammell	1918	1919	787,479	3	8 4-in. A.A., 10 smaller.	29	415
	Capetown	4200	451½	43 10	14 1	40,000 (G.) Y.	Laird	Laird	1918	1919	839,123	3	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L.	29	415
Carlisle Class	Carlisle	4200	451½	43 10	14 1	40,000 (G.) Y.	Vickers	Vickers	1918	1919	839,123	—	8 4-in. A.A., 10 smaller.	29	415
	Colombo	4200	451½	43 10	14 1	40,000 (G.) Y.	Cammell	Cammell	1918	1919	839,123	—	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L.	29	415

Ceres Class	Cardiff .	4290	450	430	430	430	29	430
	Ceres .	4290	450	430	430	430	29	430
	Curacao .	4290	450	430	430	430	29	430
Caledon Class	Curlew II .	4290	450	430	430	430	29	430
	Coventry II .	4290	450	430	430	430	29	430
	Caledon .	4290	450	430	430	430	29	430
Leander Class	Calypso .	4180	450	430	430	430	29	430
	Caradoc .	4180	450	430	430	430	29	430
	Achilles .	7030	554	55	55	55	32½	570
Dido Class	Leander .	7270	554	55	55	55	32½	570
	Charybdis .	5450	554	55	55	55	32½	570
	Cleopatra .	5450	554	55	55	55	32½	570
Hawkins Class	Scylla .	5450	554	55	55	55	32½	570
	Dido .	5450	554	55	55	55	32½	570
	Euryalus .	5450	554	55	55	55	32½	570
M. Cr. Class	Naiad .	5450	554	55	55	55	32½	570
	Phoebe .	5450	554	55	55	55	32½	570
	Sirius .	5450	554	55	55	55	32½	570
Hawkins Class	Bonaventure .	9100	605	65	65	65	20	730
	Hermione .	9100	605	65	65	65	20	730
	Vindictive † .	9100	605	65	65	65	20	730
M. Cr. Class	Adventure .	6740	539	59	59	59	28	700
	Adventure .	6740	539	59	59	59	28	700
	Adventure .	6740	539	59	59	59	28	700

* Total estimated cost of ship, including guns.

† Vindictive is de-militarised and employed as a cadets' training ship.

‡ Anti-aircraft ship.

§ Being converted to anti-aircraft ship.

GREAT BRITAIN.—Miscellaneous Craft.

Training Ships and Gunnery Drill Ships (ex-Monitors).—Erebus, 7,200 tons; Marshal Soult, 6,400 tons, 2 15-in. guns, 2 3-in. H.A. guns.
Fishery Protection Gunboats (ex-trawlers).—Colne, Doon, Dee, Eden, Foyle, Garry, Kennet, Liffey, 490-550 tons, 11 knots, reciprocating machinery, 1 12-pr. Destroyer Depot Ships.—Greenwich (1916), 8,100 tons, 4 4-in. guns; Woolwich (1935), 8,750 tons, 15 knots, 4 4-in. A.A. Tyne, (building) 11,000 tons, 4 5-in. guns, Hecla, building.

Submarine Depot Ships.—Lucia, 5,800 tons; Titania, 5,250 tons, 14.5 knots; Cyclops, 11,300 tons, 13 knots; Medway (Vickers', 1929), displacement 14,550 tons, speed 15 knots, armament 2 4-in., 4 4-in. A.A., 4 3-pr. Maidstone, 8,900 tons, 17 knots, 8 4.5-in., 4 3-pr. Forth, (as Maidstone). Adamant, building.

Repair Ships.—Resource (Vickers', 1930), displacement 12,300 tons, speed 15 knots, armament 4 4-in. A.A.

Minelayers (ex-Monitors).—1915.—Medusa, Melpomene, Minerva, 355 tons, 10 knots, 52 mines; (ex-trawlers) Vernon, 430 tons; Linnet, 498 tons, 10½ knots; Plover, 805 tons, 14½ knots. Redstart and Ringdove (as Linnet). Abdel, Latona, Manxman, Welshman, 2,650 tons, building.

Surveying Vessels.—Fitzroy, Flinders, and Kellert, 800 tons, 13-pr.; Herald, 1,650 tons, 13½ knots, 1 3-pr.; Endeavour, 1,280 tons, 13 knots, 1 3-pr.; Challenger, 1,140 tons, 1,200 H.P. (recip.), 12½ knots, 1 3-pr. Scott, building.

Non-magnetic Survey Vessel.—Research, building by Phillips at Dartmouth. Sailing vessel. Aux. motor, 160 B.H.P., 770 tons, 6½ knots.

Netlayer and Target Towing Vessels.—Guardian (Chatham, 1931-3), 2,860 tons, 6,500 H.P., 18 knots, 2 4-in. A.A. Protector (1934 programme), 2,900 tons, 20 knots, 1 4-in.

Mining School (Vernon) Tender.—Nightingale (Portsmouth, 1931), Skylark (Portsmouth, 1932), displacement 275 tons, horse-power 400, speed 10 knots, coal capacity 15 tons.

Boom Defence Vessels.—Moorgate (Bow, McLachlan 1931), 345 tons, 1 3-in. gun; Bishopsgate (Henry Robb, 1932) and Aldgate (1934); Watergate (1934); Ludgate, Dowgate, 290 tons, Dunnet (1937), 350 tons, 1 3-in. 17 "Bar" class, 730 tons, 11.75 knots, 1 3-in. (built). 6 building.

Tenders.—(For Submarine depot, Portland), Eifin (1933), 222 tons, 250 H.P., 9½ knots. (For Torpedo School) Redwing (1933), 225 tons, 250 H.P., 9½ knots.

Gunnery Training Ship.—Battleship Iron Duke has been de-militarised under the London Treaty and converted to a Gunnery Training Ship (1931-32).

Fleet Target Ship.—Centurion (ex-battleship), 25,500 tons.

Trawlers.—Basset (1935), 460 tons, 1 4-in. gun; Blackwater, Foyle and Kennett (War built), 400-500 tons; Lilac, Laurel, Holly, Hawthorn, Cedar, Cypress, Sycamore, Syringa, Magnolia, Willow, 570-600 tons, 1 4-in. gun; Tourquaze, Topaze, Sapphire, Tourmaline, Jasper, Cornelian, Pearl, Ruby, Amethyst and Agate, purchased in 1935, 580-640 tons, 1 4-in. gun. 16 to be purchased.

Special Service Vessel.—Lasso, 910 tons, 13 knots (cable ship).

Motor Torpedo Boats.—Nos. 1-12 and 14-19 are of the same design, 60 ft. long. 18 tons, 1,500 B.H.P., 35 knots, 8 small guns, 2 torpedoes. There is no No. 13.

Six M.T.B.'s to be built by Vosper and Thornycroft have been designated M.T.B.'s 20-25, about 32 tons. B.H.P. 3,150, 40 knots. 2 torpedoes. No. 100 (ex-M.M.B. 51). M.T.B. 101, 67 ft., 22 tons, 2 torpedoes. M.T.B. 102, 68 ft., 28 tons, 3000 B.H.P., 44-48 knots. 2 21-in. torpedoes. Bloodhound, 35 tons; length, 68 ft.; beam, 19 ft.; 25 knots.

Motor Minesweepers.—Nos. 1 and 2, 52 tons, 1,500 H.P., 15 knots.

Auxiliaries.—Tugs, Drifters, Hospital Ship (Maine, 10,100 tons), Oilers, Store ships, Mooring lighters, etc.

Monitors.—Terror 7,200 tons, 12 knots, 2 15-in., 2 4-in., 2 3-in. A.A. 12 smaller guns.

Fleet Air Arm Supply and Depot Ship.—Unicorn, building.

For sloops, minesweepers and river gunboats, see Flotilla tables, pp. 195-203.

Defence Forces of the Dominions.

ROYAL AUSTRALIAN NAVY.

Under Control of the Australian Naval Board.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power.	Where built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.			Armament.		Speed.	Complement (War.)
												Belt.	Deck.	Gun Position.	Guns.	Torpedo Tubes.		
Kent Class Cruisers	Australia .	9870 tons.	630 ft.	68 ft.	16 ft.	3 ft.	80,000 B.C.	Brown	1927	1928	£ ..	in.	..	in.	8 8-in., 4 4-in. A.A., 4 3-pr., 4 2-pr. Pom	8 21"	31½ knots	685
	Canberra .	9850 tons.	630 ft.	68 ft.	16 ft.	3 ft.	80,000 B.C. (G.) Y.	Clydebank	1927	1928	£ ..	..	..	..	8 8-in., 4 4-in. A.A., 4 3-pr., 4 2-pr. Pom	8 21"	31½ knots	685
Modified Leander Class	Sydney .	6850 tons.	530 ft.	56 ft.	8 ft.	8 ft.	72,000 P.T. (G.)	Swan Hunter	1934	1935	1,426,791*	..	..	..	8 6-in., 8 4-in. A.A., 1 catapult, 1 aircraft	8 21"	32½ knots	590
	Hobart (late Apollo)	7000 tons.	562 ft.	56 ft.	8 ft.	8 ft.	72,000 P.T. (G.)	Beardmore	1934	1936	1,459,117*	..	..	..	18 smaller, 1 catapult, 2 aircraft (Sydney, 1 aircraft)	8 21"	32½ knots	590
	Perth (late Amphion)	7100 tons.	560 ft.	56 ft.	8 ft.	8 ft.	72,000 P.T. (G.)	Beardmore	1934	1936	1,506,668*	..	..	..	18 smaller, 1 catapult, 2 aircraft (Sydney, 1 aircraft)	8 21"	32½ knots	590
Adelaide Type Cruiser	Adelaide .	5100 tons.	462½ ft.	50 ft.	15 ft.	10 ft.	25,000 P.T. Y.	Sydney	1918	1922	£ ..	3	—	..	9 6-in., 1 3-in. A.A., 4 3-pr., 8 L., 2 M.	2 (sub.) 21"	25.5 knots	450
	Stuart .	1530 tons.	332½ ft.	31 ft.	9 ft.	12 ft.	40,000 P.T. Y.	Hawthorn Leslie	1918	1918	£ —	—	—	—	5 4.7-in., 1 3-in. A.A., 7 M. & L.	6	36½ knots	182

DESTROYERS.—"P" Class :—Vampire, Vendetta, Voyager, Waterhen. Completed, 1917-18; Displacement, 1,090 tons; 27,000 H.P.; speed, 34 knots; armament, four 4-in.; 6 smaller guns, 6 torpedo tubes.

SLOOP.—Yarra (1935), 1060 tons, 2000 H.P. (T.G.). 16½ knots, 3 4-in., 4 3-pr., and Swan, a repeat vessel (1936). Parramatta and Warrego, repeat vessels, building.

SURVEYING VESSEL.—Moresby (late Silvio) (1918), 1650 tons, length 267½ ft., 2,500 H.P., 15 knots, one 3-pr.

DEPOT AND FLEET REPAIR SHIP.—Penguin (late Platypus) (J. Brown, Clydebank, 1917). Displacement 3455 tons, 14 knots, 1 4-in.

BOOM DEFENCE VESSELS.—Kookaburra, 523 tons. Koala, Kangaroo, building.

* Total cost, including guns and aircraft.

NEW ZEALAND DIVISION OF ROYAL NAVY.

Under the control of New Zealand Naval Board.

TRAINING AND DEPOT SHIP.—Philomel (2570 tons); 1 6-in., 1 4-in., 2 12-pr. TRAWLER.—Wakakura.
The CRUISERS Achilles and Leander and the SLOOPS Leith and Wellington are allocated to the station.

ROYAL CANADIAN NAVY.

Under control of the Canadian Department of National Defence.

DESTROYERS.—Fraser, ex-Crescent and St. Laurent, ex-Cygnnet taken over by Canada 1936. Built by Vickers 1932; 1375 tons; 36,000 H.P.; 36 knots; armament, 4 4.7 in., 7 smaller guns, 2 Quadruple 21" torpedo tubes. Restigouche (late Comet) and Ottawa (late Crusader) 1975 tons; 36 knots; 4 4.7-in., 6 smaller guns, 8 torpedo tubes. Saguenay and Skeena completed at Thornycroft's in 1931; displacement, 1397 tons; 32,000 H.P.; speed, 35 knots; armament, 4 4.7-in., 2 2-pr., 2 quad. 21-in. torpedo tubes; oil, 440 tons.

GOVERNMENT VESSELS (armed).—A number of trawlers are used for patrol and reserve.

MINESWEEPING TRAWLERS.—Festubert, Ypres, and Armentières (1918), 360 tons; Comox, Nootka, Gaspe and Fundy (1938), 668 tons.

SOUTH AFRICA.

[The seagoing force of the South African Naval Service was disbanded in 1934.]

ROYAL INDIAN NAVY.

MINESWEEPING SLOOPS.—Indus (1935, Hawthorn Leslie), 1,190 tons; 2,000 H.P.; 16½ knots; 2 4.7-in., 4 3-pr., 11 smaller guns. Hindustan (1930, Swan Hunter), 1,190 tons; 2,000 H.P.; 16½ knots; 2 4-in., 4 3-pr., 10 smaller guns. Olive, 2,021 tons; 1,700 H.P.; 14½ knots; 2 4-in., 2 2-pdr., 4 3-pdr. guns; completed Beardmore, 1920. Lawrence, 1,259 tons; 1,900 H.P.; 15 knots; 2 4-in., 4 3-pdr., 2 2-pdr. guns; launched Beardmore, 1919.

SLOOP.—Cornwallis, 1,345 tons; 17 knots; 2,500 H.P.; 3 4-in., 2 2-pdr., 4 3-pdr. guns (launched Hamilton, 1917, as the Lynchris).

SURVEYING SHIP.—Investigator (Vickers, 1907), 1,172 tons; 1,137 H.P.; 13 knots; no guns.

PATROL BOAT.—Pathan (ex-P.C. 69), 695 tons; 3,500 H.P., 20 knots, 1 4-in. and 2 12-pdr. guns; completed 1918.

TRAWLER.—Madras.

ARGENTINE REPUBLIC.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draft.	Type of Machinery.	Where Built.	Date of Launch.	Cost.	Armour.					Armament.		Speed.	Fuel.	Complement.
										Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Guns.	Torpedo Tubes.			
c.	La Argentina	7000 tons.	535 ft.	56 ft.	16 ft.	55,000 P.T. (G.) Y.	Vickers, Barrow	1937	1938	£ ..	in. ..	in. ..	in. ..	in. ..	in. ..	6 21" M.G., 1 catapult, 2 aircraft (T.)	30 knots.	Coal 1000 tons.	556 + 60 Gun.
c.	Almirante Brown	6495 tons.	545 ft.	58 ft.	16 ft.	85,000 Y. (G.)	Genoa	1929	1931	1,250,000	3	1	..	2	2	6 7.5-in., 12 4-in. A.A., 6 Pom Poms, 1 catapult, 2 seaplanes.	32 knots.	—	600
c.	Venticinco de Mayo	6100 tons.	328 ft.	59 ft.	24 ft.	13,000 Y. (G.)	Leghorn	1897	1899	696,700	6-3 H.S.	1½	6	6	6	2 10-in., 8 6-in., 4 6-pr. 2 1.5-in. A.A.	20 knots.	—	515
c.d.s.	General Belgrano†	6100 tons.	328 ft.	59 ft.	24 ft.	13,000 Y. (G.)	Leghorn	1897	1899	696,700	6-3 H.S.	1½	6	6	6	2 10-in., 8 6-in., 4 6-pr. 2 1.5-in. A.A.	20 knots.	—	430
c.d.s.	Pueyrredon†	6100 tons.	328 ft.	59 ft.	24 ft.	13,000 Y. (G.)	Sestri Ponente	1898	1901	782,000	6-3 H.S.	1½	6	5	6	2 10-in., 8 6-in., 4 6-pr. 1 1-pr. A.A.	20 knots.	—	430
b.	Moreno	27,940 tons.	585 ft.	97 ft.	28 ft.	45,000* (G.)	Camden, N.J. (N.Y.S.B.Co.)	1911	1915	2,200,000	12-10-8-2 K.S.	9	9	12-9	6	12 12-in., 12 6-in., 4 3-pr., 6 M., 4 L.	22.5 knots.	—	1200
	Rivadavia	27,940 tons.	585 ft.	97 ft.	28 ft.	45,000* (G.)	Quincy, Mass.	1914	1914	2,200,000	K.S.	K.S.	K.S.	K.S.	K.S.	(sub.) 21"	22.5 knots.	4200	940

COAST DEFENCE SHIPS.—Libertad and Independencia, 2510 tons, 13 knots, completed at Birkenhead in 1891-93, and converted to oil fuel in 1927, carry two 9.4-in., four 4.7-in., and four 3-pr. guns. The Libertad is used as parent ship for submarines.

RIVER GUNBOATS.—Paraná and Rosario (Elswick, 1908), 1055 tons, two 6-in. howitzers, six 3-in., 2 L., 15 knots.

TRAINING-SHIP (cruiser).—Presidente Sarmiento (Birkenhead, 1896; refitted 1926), 2320 tons, 15 knots; four 4.7-in., four 6-pr. two 3-pr., 3 torpedo tubes.

SLOOP (surveying vessels).—Comodoro Rivadavia, ex-San Juan, Bahia Blanca ex-San Luis (Hawthorn Leslie, Newcastle, 1928), 790 tons, 1-3-in. 12 knots, Alferez Mackinlay (1914), 783 tons, 10 knots.

TUGS.—Mataco, Toba (completed 1928, at Messrs. Hawthorn Leslie's, Newcastle), Azapardo (1919), Oma, Querandi (Thornycroft, 1914), and 12 others.

MINESWEEPERS.—Bouchard, Drummond, Granville, Parker, Robinson, Seaver, and Spiro (1937-38); 550 tons; 2000 H.P.; 16 knots; two 3.9-in., two 2.9-in. guns; 6 ex-German Minesweepers; 16 knots; three 3-in. guns.

* Moreno and Rivadavia were converted to oil burning and fitted with geared turbines in 1928. † Converted to oil burning and armament altered in 1929. ‡ Used as training ships.

BRAZIL.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Armour.				Armament.		Speed.	Coal Oil.		Complement.
											Belt.	Deck.	Side above Belt.	Bulkheads.	Gun Position.	Guns.				
b.	Minas Geraes *	19,200	541	83	25	25,000	Elswick	1903	1910	£	in.	in.	in.	in.	in.	12 12-in., 14 4-7 in., 4 3-in. A.A.; 4 A.A. M.G.	—	21	2360	850
b.	São Paulo *	19,200	541	83	25	25,000	Elswick	1903	1910	£	in.	in.	in.	in.	in.	12 12-in., 14 4-7 in., 4 3-in. A.A.; 4 A.A. M.G.	—	21	2360	850
cr.	†Bahia . .	3150	401½	39	13½	22,000	Elswick	1909	1910	..	..	..	..	..	..	10 4-7-in., 4 3-pr.	4 21" (D)	27	—	450
cr.	†Rio Grande do Sul . .	3150	401½	39	13½	22,000	Elswick	1909	1910	..	..	..	..	..	..	10 4-7-in., 4 3-pr.	4 21" (D)	27	—	450

* Reconstructed 1934-39, 1937-40 respectively.

† Reconstructed, including conversion to oil fuel, at Rio de Janeiro, 1926.

RIVER GUNBOAT.—Oyapock, 195 tons, 14 knots, two 3-pr.

MINELAYERS.—Maria do Couto, Cananea, Cabedelo, Camocim, Canavieiras, Caravelas, Carioca, 188½ feet, 552 tons, 14 knots, 2 4-in. guns, 50 mines.

RIVER MONITORS.—Pernambuco, 470 tons, 11 knots, built at Rio de Janeiro (1910), two 4-7-in. guns. Parnahyba, 600 tons, 180½ feet in length, 12 knots, one

6-in. gun. Paragassu, 430 tons, 146 feet, 1 4-7-in. gun.

SUBMARINE TENDER.—Ceara (Spezia, 1916), 4000 tons, 4100 H.P., 14 knots, four 4-in. guns.

REPAIR SHIP.—Belmont (ex-German SS. Valesia), 5227 tons gross, four 4-7-in. six 6-pr.

TRAINING SHIP.—Almirante Saldanha, Vickers' (1934). A four-masted schooner, 3325 tons, 305 feet over all, four 4-in. and one 3-in. A.A. guns, one 21-in. torpedo

tube.

SURVEY VESSELS.—Rio Branco, 895 tons, 15 knots, two 6-pr. Calheiros da Graca, Vital de Oliveira, Jose Bonifacio, 1,300 tons, 9 knots, two 4-in., two 6-pr.,

Jacequay, 800 tons, 16 knots.

Tugs, Tenders, Tankers and River Craft.

CHILE.—Armoured Ships.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.				Armament.		Speed.	Fuel.		Complement.	
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Guns.		Heavy.	Second.		Torpedo Tubes.	Coal.	Oil.
b.	Almirante Latorre * (ex-H.M.S. Canada)	28,950 tons.	661 ft.	92 ft. 6 in.	6 ft. 2 9/16 ins.	37,000 P.T.	Elswick.	1913	1915	£ ..	in. 9-4	4-2 1/2	4 1/2	in. ..	in. 10	6	10 14-in., 14 6-in., 4 4-in., A.A., 2 3-in., A.A., 4 3-pr., 1 catapult.	4 (sub.) 21"	knots. 23	— tons. 4300	1000
cr.	General O'Higgins	6,977 tons.	412 ft.	62 ft.	9 ft. 2 1/2 ins.	16,000 Y.	Elswick.	1897	1898	£ ..	7-5	2	..	..	7 1/2-6	6	4 8-in., 10 6-in., 12 3-in., 4 M.	2 18"	21.5	1200	500
b.	Capitan Prat †	5,416 tons. p.p.	328 ft.	60 ft.	9 ft. 2 1/2 ins.	12,000 B.	La Seyne	1890	1893	391,000	12	3	4	..	10 1/2	2	4 9.4-in. (Canet), 8 4.7-in. (Canet), 8 6-pr., 11 M.	2 18"	18	— tons. 775	500

* Fitted with bulges, converted to oil burning, and modernised in England (completed 1931).

† Submarine parent ship.

Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Coal.	Complement.
		tons.	ft. ins.	ft. ins.	ft. ins.						Deck.	Gun Position.	Guns.	Torpedo Tubes.	knots.	tons.	
cr.	Blanco Encalada	3435	370	46 6	19 6	14,500	Elswick.	1893	1894	..	in. 4-1½	..	2 8-in., 10 6-in., 4 3-in.	2 18"	22.78	850	385
"	Chacabuco	3417	360	46 6	17 0	15,500	Elswick.	1901	1903	..	4½-1½	..	2 6-in., 10 4.7-in., 4 3-in.	2 18"	24.0	1000	400

OILERS (Armstrongs, 1930)—Maipo, 4,686 tons gross; Rancagua, 3,080 tons displacement, two 4.7-in. guns. COASTGUARD VESSELS—Orompello, Leucoton, Elicura, 530 tons; built 1919; 14 knots; 2 3-in. guns; Porvenir, 450 tons. Sibald, Velcho, Micalvi, Condor, and Yancz. SUBMARINE DEPOT SHIP—Araucano (Vickers-Armstrongs, Barrow), completed 1930; displacement 5,890 tons; armament two 4.7-in., two 3-in. A.A.; length b.p. 390ft.; beam 55 ft.; draught 16 ft. 6 ins.; speed 13 knots; H.P. 2,500; 1 seaplane.

TRAINING SHIP.—General Baquedano (1898). 2350 tons, four 4-in. guns, two 3-pr. Two Cruisers projected. Probably 10,000 tons, with 8-in. guns.

Five tugs, 790 tons, 11 knots.

Two towing launches.

DENMARK.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed	Fuel.		Complement.			
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Guns.		Torpedo Tubes.	tons.		Coal.	Oil.	
cr.	Niels Juel	3800 tons.	295	45	6	15	9	5500	Copenhagen	1918	1923	£	in.	8-4	2	in.	in.	2	10 5-9-in., 26-pr., 8 m.g., 10 20-m.m. A.A.	2 (sub.) 18"	17-0	240	250	365
c.d.s.	Peder Skram	3500	286	7	51	6	16	3	5400	Copenhagen	1908	1909	..	8-4	2	2	7	6	29-4-in., 45-9-in., 83-in., 21-pr., 23-in. A.A., 2 m.	4 (sub.) 18"	16-0	250	—	275

MINELAYERS.—Løssen 640 tons, 12 knots. 2 3-in., 2 A.A. guns, 175 mines; Sixtus and Kvintus, 186 tons, 8 knots, 2 1-pr. guns, 60 mines; Mining boats 1-10.

Mine dépôt boats, 1-2. Steamboat A, 96 tons, 7 knots, 2 m.g. Lindormen, 500 tons, 14 knots, building.

MINESWEEPERS.—Springeren, Støren, Soridderen, Søhunden, Havhesten and Narhvalen, 110 tons, 24.3 knots, 2 2½-in. guns, 1 torpedo tube; Soloveon, Sobjoren, Soulvén, 270 tons, 18 knots, 2 3-in.

GUARDSHIPS.—Hvalrossen, 169 tons, 26.3 knots, 1 3-in. gun, 4 18-in. torpedo tubes; Makrelen, Nordkaperen, Havkatten, and Saelen, 110 tons, 24.3 knots, 2 2½-in. guns, 4 18-in. torpedo tubes.

SURVEYING VESSELS.—Hejmdal, 825 tons, 12½ knots, 2 3-in. guns; Ternén, 80 tons. Freja, 315 tons, 10 knots, building.

REPAIR SHIP.—Henrik Gerner, 463 tons, 13 knots, 2 3-in., 2 ½-in. guns.

FISHERY PROTECTION VESSELS.—Ingolf, 1190 tons, 16½ knots, 2 4.7 in., 2 2½-in. guns, 1 aircraft; Hvidjörnen, 1050 tons, 14½ knots, 2 3½-in. guns; Islands Falk, 730 tons, 13 knots, 2 3-in., 2 1½-in. guns; Beskytteren, 415 tons, 11 knots, 1 2½-in. gun; Maagen, 110 tons, 8 knots, 1 1½-in. gun; Aegir, 500 tons, 14 knots.

DEPOT SHIPS.—Hekla, Grønsund, Fyen. TRANSPORT SHIPS.—Sleipner, 110 tons, 8.7 knots; Midleggrunden, Fremad, Kongedybet. Icebreakers. Cable Ships.

FRANCE.—Battlehips.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel. Coal. Oil.	Complement.	
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Guns.				Torpedo Tubes.
b.	Richelieu	tons.	ft. ins.	ft. ins.	ft. ins.		Brest	1939	Bldg.	£	in.	8	in.	in.	in.	in.	8 15-in., 15 6-in., 8 1.5-in. A.A., 2 catapults, 4 aircraft.	..	about 31	..	1500
b.	Jean Bart	35,000	794 W.L.	108 6 26	7	155,000	St. Nazaire	1939	..	..	9-16	8	..	..	..	..	8 15-in., 15 6-in., 8 1.5-in. A.A., 2 catapults, 4 aircraft.	..	..	..	1500
b.	Clemenceau						Brest	Bldg.	..	..	..	..	..	..	..	..	..	..	..	..	1500
b.	Gasconne						St. Nazaire	..	..	..	..	..	..	..	..	..	..	..	..	..	1500
b.c.	Strasbourg	26,500	702	0 102 0 25	0	150,000 P.T. (G)	St. Nazaire	1936	1938	..	..	10-8	4-9	..	..	13-8	8 13-in., 16 5.1-in., 44 smaller, 1 catapult, 4 aircraft	..	29½	..	1431
b.c.	Dunkerque	26,500	702	0 101 8 27	11	100,000 -120,000 P.T. (G)	Brest	1935	1937	5,200,000	..	..	..	..	..	..	..	..	..	..	1431
b.	Bretagne †	22,189	544	6 88	6 32	0 29,000 Nic. P.T.	Brest	1913	1915	2,589,439	..	..	..	..	..	..	10 13.4-in., 14 5.4-in., 8 3-in. A.A., 5 3-pr., 2 1-pr., 2 L.	4 (sub.) 18"	21.0	— 2600	1167
b.	Provence †	22,189	544	6 88	6 32	0 29,000 P.T.	Lorient	1913	1916	2,589,000	..	..	..	..	..	..	10 13.4-in., 14 5.4-in., 8 3-in. A.A., 5 3-pr., 2 1-pr., 2 L.	4 (sub.) 18"	21.0	— 2600	1167

† Reconstructed and modernised between 1923 and 1935.

FRANCE.—Battleships—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme)	Beam.	Draught.	Horse-power. Type of Machinery and boilers.	Where Built	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.		Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.		Coal.	Oil.		knots.	tons.
b.	Courbet †	22,189	551	0 92	6 32	0 28,000 Nic. P.T.	Brest	1911	1913	2,508,388	11-7	23-1½	7	7	10½	7	12 12-in., 22 5-4-in., 2 3-pr., 7 3-in. A.A., 2 1-pr., 2 L.	4 (sub.) 18"	20-0	300	2700	1068
b.	Paris †	22,189	551	0 92	6 32	6 28,000 N. P.T.	La Seyne	1912	1914	2,603,920	11-7	23-1½	7	7	10½	7	8 13-4-in., 14 5-4-in., 8 8-9-in. A.A., 5 47mm. A.A., 2 1-pr., 2 L., 2 aircraft, 1 catapult	4 (sub.) 18"	21½	300	2600	1167
b.	Lorraine †	22,189	544	6 88	6 32	0 42,000 B. P.T.	St Nazaire	1918	1916	2,642,489	11-7	23-1½	7	7	10½	7						

† Reconstructed and modernised between 1923 and 1935.

Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draft.	Horse-power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.	Speed.	Fuel.	Complement.
											Belt. Deck.	Gun Position.				
A.C.	Bearn *	22,146	599	60 115	30 6	87,200	La Seyne	1920	1928	£ ..	In. 3½ 1-3	In. ..	8 6-1-in., 6 3-in. A.A., 8 1-pr. A.A., 12 M. A.A., 41 planes	21.5	— 2070	875
Aircraft Trans- port A.C.	Commandant Teste Joffre Painlevé }	10,000	548	0 88 7	22 9	21,000 †	Bordeaux	1929	1932	..	2 1½	..	12 3-9-in. A.A., 8 3-pr. A.A., 12 M., 19 planes, 4 catapults, 5 cranes.	20.5	oil	648
		18,000	775	0 112 0			St. Nazaire	Bldg.					5 1-in. guns, 40 planes.	32		

* Originally designed and laid down as a battleship; reconditioned 1935.

† Schneider-Zoelly turbines (G.). Yarrow-Loire S.T. boilers.

FRANCE.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power.	Type and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
												Belt.	Gun Position.	Guns.	Torpedo Tubes.			
Training cruiser	Jeanne d'Arc	tons. 649.	ft. ins. 557 8	ft. ins. 57 6	ft. ins. 18 8	32,500		St. Nazaire	1930	1931	£ ..	in. ..	in. ..	8 6-in., 4 3-in. A.A., 2 1-6-in., 2 m., 2 seaplanes	2 21-7"	knots. 26	tons. — 1400	506
	Jean-de-Vienne	7600	587 3	57 2	16 5	84,000 G.T.		Lorient.	1933	1937	..	4 3/4	Deck	9 6-in., 8 3-5-in. A.A., 8 1-pr., 1 catapult, 4 aircraft	4 21"	31	— 1500	537
Improved La Galissonnière	De Grasse	8000	..	..	..	..	..	Lorient	Bldg.	..	..	..	..	9 6-in., 2 aircraft	6 21"	..	..	..
	Chateaurenault							La Seyne										
1932-33 pro-gramme	Guichen							Bordeaux										
	Marseillaise							St. Nazaire	1935									
1932-33 pro-gramme	Gloire	7600	587 3	57 4	17 5	84,000 (G.)		Bordeaux	1935	1937	..	4 3/4	Deck	9 6-in., 8 3-5-in. A.A., 8 1-5-in. A.A., 4 seaplanes, 1 catapult	4 21"	32 1/2	— 1500	630
	Montcalm							La Seyne	1935									
—	Georges Leygues							St. Nazaire	1935									
	Algérie	10,000	610 3	65 8	23 0	84,000 (G.)	Pen.	Brest	1932	1934	1,920,000	about 4	Deck	8 8-in., 12 3-9-in. A.A., 8 1-pr., 16 m., 2 catapults, 2 seaplanes	2 21"	31	— 1900	746
Suffren Class	Dupleix								1930	1932	1,570,000							
	Foch	10,000	636 6	63 6	24 0	90,000 (G.)		Brest	1929	1931	1,450,000	..	..	8 8-in., 8 3-5-in. A.A., 6 1-pr. A.A., 12 m., 3 seaplanes, 2 catapults	2 21"	32	— 1800	605
—	Colbert								1928	1931	1,270,000							
	Suffren	10,000	607 0	65 0	24 0	90,000 (G.)		Brest	1927	1930	1,210,000	..	..	8 8-in., 8 3-in. A.A., 8 1-pr. A.A., 12 m., 3 seaplanes, 2 catapults	2 21"	32	— 1800	605
Duquesne Class	Tourville								1926	1928	..	..	..	8 8-in., 8 3-in. A.A., 8 1-pr., 2 seaplanes, 1 catapult	2 21"	33.2	— 2000	620
	Duquesne	10,000	626 8	62 4	23 0	120,000 (G.)		Lorient.	1925									

Duguay-Trouin

Duguay-Trouin, Class	Primauguet	7249	594	10	57	6	20	8	110,000	Brest	1923	1926	86-1-in., 43-in. A.A., 2-3-pr., 4 m., 1 L., 1 seaplane, 1 catapult	33-1	578
M.Cr.	La Motte Picquet								(G.)	Brest	1924	1926	1 catapult	4	1480
	Emilé Bertin	5886	580	9	52	0	16	4	102,000	Lorient	1924	1926	1 catapult, 200 mines, 8 m., 1 a.w., 2 aircraft	34-0	550
									P.T.(G.)	St. Nazaire	1933	1934			1800

RIVER GUNBOATS.—François Garnier (1929), 639 tons, 15 knots, two 4-in., one 3-in. A.A.; Vigilante, Argus (1924), 218 tons, 12 knots, two 3-in., two 1-pr.; Baly (1921), 201 tons, 14 knots, one 3-in.; Doudart de Lagrée (1909), 183 tons, 14 knots, one 3-in., two 1-pr.; Mytho, Tourane (1934), 95 tons, 250 H.P. (Diesel), 10 knots, one 3 in., two 1-pr.; Avalanche and Commandante Bourdais (1920), 128 tons, 16-5 knots, one 3-in. gun, two 1-pr.

RIVER SLOOP.—No. 1 (1925), 40 tons, 9 knots.

MINESWEEPERS.—Conquérante (1918), 374 tons, 17 knots, two 3-9-in.; Luronne (1917), 266 tons, 13-8 knots, two 3-9-in.; Audacieuse (1917), 266 tons, 15 knots, two 3-9-in.; Engageante, Diligente (1917), 315 tons, 17 knots, two 3-9-in.; Étouardi (1916), 310 tons, 17 knots, two 3-9-in.; Détaigieuse, Tapageuse (1916), 266 tons, 15 knots, two 3-9-in.; Granit, Meulière (1919), 354 tons, 12-5 knots, one 9-pr., Commandant Bory, Commandant Delage, Commandant Duboc and Commandant Rivière, 630 tons, 20 knots, two 3-9-in.; Annamite, La Surprise, 647 tons; La Capricieuse, 647 tons; La Capricieuse, La Moqueuse, Commandant Domine, L'Impétueuse, La Curieuse, La Bondeuse, La Batailleuse, La Gracieuse, Amiral Senes, Enseigne Ballande, Matelot Leblanc, Ragoet de la Touche, La Joyeuse, La Trompense, La Furieuse, La Perouse, Le Goeland, Le Pelican, Le Comoran, La Monette, L'Ibis, Le Bengali, 630 tons, 20 knots, two 3-9-in. guns.

MINELAYERS.—Castor, 3150 tons, 14 knots, four 3-9-in., two 1-5 A.A., 368 mines; Pollux, 2461 tons, 14 knots, four 3-9-in., 234 mines. Both converted 1930.

SUBMARINE PARENT SHIP.—Jules Verne (1931), 5,747 tons, 7,000 H.P. (Diesel), 16 knots, mounting four 3-5-in. A.A., four 1-pdr. A.A.

SLOOP.—Bougainville, Dumont D'Urville, Savorgnan de Brazza, and d'Entrecasteaux (1932-1933), Rigault-de-Genouilly Amiral Charner, and D'Iberville (1933-1935), 1969 tons, 3,200 H.P. (Diesel), 17 knots, armament three 5-4-in., four 1-5-in. A.A., 6 m., 50 mines, 1 seaplane; Ville d'Ys (ex-Andromède) (1917) (on fishery protection duties), 1,122 tons, 17 knots, mounting three 3-9-in., two 3-in. (1 A.A.), 2 m.; Altair (1916), 1,122 tons, 17 knots, mounting two 5-4-in., two 3-in. A.A., 2 m. Beauteamps-Beaupre, Ville d'Ys, Laprouse, 2000 tons, building.

DESPATCH VESSELS.—Duperré Class:—Du Couedic, Enseigne Henry, Dubordieu (1919-1920), 453 tons, 17 knots, one 5-4-in., one 3-9-in. "Arras" Class:—Calais, Lassinig, Vauquois, Epinal, Coucy, Laffaux, Amiens, Tahure, Arras (1919-1923), 644 tons, 20 knots, two 5-4-in., one 3-in. A.A. guns. "Aisne" Class:—Ancer, Suippe, Yaer, Somme, Marne (1917-1918), 490-600 tons, 21 knots, four 3-9-in. guns, one 3-in.

NET-LAYERS.—Le Gladiateur, (1934), 2,293 tons, 370 ft. 8 in. long, 7,700 H.P., 21 knots, four 3-5-in. A.A., 6 m.

SURVEYING SHIPS.—Amiral Mouchez, 719 tons, 12 knots, two 3-9-in.; La Perouse, 78 tons, 11 knots; Astrolabe, Octant, and Gaston-Rivier (1918), 315 tons, 10 knots; Chimère (1901), 613 tons, 14 knots; Estafette, Sentinelle, 315 tons, 10 knots; Les Eparges, Ypres, 644 tons, 20 knots, one 3-in. gun.

MOTOR TORPEDO BOATS.—V.T.B.'s 8 and 10, 19 tons, 2000 H.P., 46 knots; V.T.B.'s 11 and 14, 45 knots, 28 tons, building; V.T.B.'s 15-40, 37 tons, building.

SUBMARINE CHASERS.—Nos. 1-4 (1935), 148 tons, 2,400 H.P., 20 knots, one 3-in. gun. Nine in number (1918), 70 tons, 16 knots, one 3-in. gun. Seventeen in number, 112 tons, 16 knots, building.

PATROL VESSELS.—Primevère, 490 tons, 8 knots; Fauvette II, Passereau II, 315 tons, 10 knots; Quentin-Roosevelt, 586 tons, 13 knots.

REFRIGERATOR SHIPS.—Champlain (1919), 520 tons, one 3-in. gun; Austral, Boreal, 15 knots.

AIRCRAFT SUPPLY SHIPS.—Belfort, 644 tons, one 3-in. gun; Hamelin, 622 tons, one 3-in. gun; Sans-Souci, Sans Peur, Sans-Reproche, Sans-Pareil, 800 tons, building.

OILERS.—12 in number, 10 building. Cable ships. Water carriers. Tugs. Training ships. Target vessel, 2,250 tons.

TRANSPORTS.—Golo, 2118 tons, 12½ knots, two 3-in., two 1-pr.; Lolret, Coetlogon, Forfait, Jeanne-of-Genevieve, 622 tons, 12 knots, one 3-in. gun; Aude, 1,820 tons, 12 knots.

GERMANY.—Battleships.

Class.	NAME.	Normal Displacement. tons.	Length. (Extreme). ft. ins.	Beam. ft. ins.	Tonnage. ft. ins.	Type of Machinery. Horse-Power.	Where Built.	Date of Launch.	Cost.	Armour.					Armament.		Speed. knots.	Coal Oil.	Complement.
										Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second- ary.	Guns.	Torpedo Tubes.		
b.	"H" and "I"	40,000	..	..	..	..	..	Bldg. 1939	£	in.	in.	in.	in.	in.	in.	..	..	..	..
b.	Bismarck	35,000	792	0 118	0 26	0	Hamburg	1939	..	..	..	..	..	..	..	..	..	..	..
b.	Admiral von Tirpitz	35,000	792	0 118	0 26	0	Wilhelms- haven	1939	..	..	..	..	..	..	..	8 15-in., 12 5-9-in., 16 2-in.	..	..	..
b.	Scharnhorst	26,000	741	6 98	6 24	8	Wilhelms- haven	1936 1939	..	..	..	..	..	..	..	9 11-in., 12 5-9-in., 14 4-7-in. A.A., 4 aircraft, 2 catapults	..	..	..
b.	Gneisenau	(standard)	..	..	..	..	Kiel	1936 1938	..	..	..	..	..	..	..	..	..	..	..
b.	Lutzow (ex-Deutschland)	10,000	..	..	..	..	Deutsche Werke, Kiel	1931 1933 3,750,000 estimated	..	about 4	14-3	..	..	about 7	..	6 11-in., 8 5-9-in., 6 4-1-in. A.A., 8 3-pr., 10 M., 1 catapult, 2 aircraft (Q.)	8	26	965
b.*	Admiral Scheer	(standard)	609	3 67	6 19	0 56,800	Wilhelms- haven	1933 1934 3,530,000 estimated	..	..	..	..	..	..	..	..	..	1200	..
b.	Schlesien †	12,300	419	0 72	10 25	3	Schichau (Germania)	1906 1908 1,214,000	9½-4 K.S.	9½-4 K.S.	8 K.S.	6 K.S.	11-6 K.S.	6½ K.S.	4 11-in., 10 5-9-in., 4 3-5-in. A.A., 23 M.	..	18	1771	727
b.	Schleswig-Holstein †	12,300	419	0 72	10 25	3	Schichau (Germania)	1906 1908 1,214,000	9½-4 K.S.	9½-4 K.S.	8 K.S.	6 K.S.	11-6 K.S.	6½ K.S.	4 11-in., 10 5-9-in., 4 3-5-in. A.A., 23 M.	..	18	1771	727
A. C.	Graf Zeppelin	19,250	820	3 88	6 18	4	(† Deutsche Werke Germania)	1938	..	..	..	..	..	..	..	16 5-9-in., 10 4-in. H.A., 22 smaller, 50 aircraft, 40 aircraft	..	about 32	..
A. C.	"B"	19,250	820	3 88	6 18	4	Werft Bldg.	1938	..	..	..	..	..	..	..	..	..	..	..

AIRCRAFT CARRIERS.

A. C.	Graf Zeppelin	19,250	820	3 88	6 18	4	(† Deutsche Werke Germania)	1938	..	..	..	..	..	..	..	16 5-9-in., 10 4-in. H.A., 22 smaller, 50 aircraft, 40 aircraft	..	about 32	..
A. C.	"B"	19,250	820	3 88	6 18	4	Werft Bldg.	1938	..	..	..	..	..	..	..	..	..	..	..

* Officially rated as "Armoured Ships."

† Reconstructed 1925-30.

‡ Consists of eight double acting two-stroke M.A.N. Diesels.

GERMANY.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Breadth. (Extreme).	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.	Armament.	Speed.	Fuel. Coal. Oil.	Complement				
		tons.	ft. in.	ft. in.	ft. in.						£	Belt.	Guns.	knots.	tons.					
cr.	Blücher	{ 10,000 } 10,000	{ 639 } 639	{ 9 } 9	{ 15 } 15	{ 5 } (G.)	Deutsche Werke	{ .. } ..	{ 1937 } 1937	{ 1939 } 1939	{ .. } ..	{ in. } in.	{ .. } ..	{ 32 } 32	{ .. } ..	{ .. } ..				
cr.	Admiral Hipper.						Blum and Voss													
cr.	Prinz Eugen						{ Germania Werft } Deschimag													
cr.	Seydlitz																Bldg.			
cr.	ex-Lutzow \$																Bldg.			
cr.	M, N, O and P	7000	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
l.c.	Leipzig	6000	580	0	53	5	15	7	72,000†	Wilhelmshaven	Kiel	1929	1931	2,050,000	3-4	9 5 9-in., 8 3 5-in. A.A., 8 3-pr.; 1 catapult, 2 aircraft	4 triple 21-in. a.w.	32	1500 (including Diesel oil)	656
l.c.	Nürnberg	6000	580	0	53	5	14	3	72,000	Kiel	Kiel	1934	1935	..	..	9 5 9-in., 8 3 5-in. A.A., 8 3-pr.; 1 catapult, 2 aircraft	4 triple 19 7-in. a.w.	32	1500	656
l.c.	Köln.	{ 6000 } 6000	{ 570 } 570	{ 10 } 10	{ 49 } 49	{ 10 } 10	{ 17 } 17	{ 8 } 8	{ 65,000† } 65,000†	Wilhelmshaven	Kiel	1928	1930	1,785,000	{ 3-4 } 3-4	9 5 9-in., 4 3 5-in. A.A., 1 catapult, 2 aircraft	4 triple 21-in. a.w.	32	1200	592
l.c.	Karlsruhe									Deutsche Werke, Kiel	Kiel	1927	1929	1,985,000						
l.c.	Königsberg									Wilhelmshaven	Kiel	1927	1929	2,100,000						
l.c.	Emden *									Wilhelmshaven	Wilhelmshaven	1925	1925	..						
l.c.										(G.)										

* Training Ship.

† Three propeller shafts, of which the centre shaft is Diesel-driven and the others turbine-driven. Diesels used for cruising or combined with the turbines to give full speed.
 § To be renamed.
 ‡ Parsons geared turbines with Diesels for cruising.
 NOTE.—A 6000-ton cruiser was reported to have been sunk, December, 1939.

GERMANY.—Miscellaneous Craft.

ESCOPT VESSELS.—F 1, 2, 4, 5, 7, 8, 9, 10 (1986), 600 tons, 240 feet, 2 4-1-in. 4 1-pr., complement 103; 15 patrol vessels building, 1 m.g. 2 20-in. T.T.
GUNNERY TRAINING SHIPS.—*Drache* (1908), 790 tons, 15 knots, 4 4-1-in.; *Fuchs* (1919), 525 tons, 16 knots, 2 4-1-in.; *Gunnery Tenders Bremse* (Wilhelmshaven, 1932), 1,250 tons, 339½ feet long, 31 ft. 2 in. beam, 25,000 H.P. (Diesel), 27 knots, 4 4-1-in. guns, complement 162; *Brunner* (1936), 2,410 tons, 20 knots 4 4-in. guns.
FISHERY PROTECTION VESSELS.—*Weese* and *Elbe* (Wilhelmshaven, 1931), 590 tons, 1600 H.P. (Diesel), 15 knots.
EXPERIMENTAL VESSELS.—*Pelican* and *Nautilus* (500 tons, 17 knots); *Strahl*, 1643 tons, 10 knots.
MOTOR TORPEDO BOATS.—S 6 (1932), 46 tons, 2,400 B.H.P., 31-32 knots, 1 m.g. A.A., 2 19-7-in. T.T.; S 7-17 (1931-38), and S 18-25 (building), 70 tons, 1 m.g. A.A., 2 19-7-in. T.T.; S 26-37 projected.
GUARD SHIPS.—UZ (S) 8, UZ 32, 33, 60 tons, 14 knots.
TENDERS.—*Hela*, *Frauenlob*, 525 tons, 16 knots. *Nordsee*, 830 tons, 12 knots; *Taucher*, 202 tons, 6-6 knots.
SAILING TRAINING SHIPS.—*Gorch Fock* (Hamburg, 1933); *Three-masted barque*, 239 feet in length, 1,500 tons, 500 H.P. auxiliary motor giving 8 knots; *Horst Wessel* (1936) and *Leo Schlegeler* (1938), 1,634 tons, 295 ft. 3 in. in length, 85 ft. 4 in. beam, 15 ft. 9 in. draught, 750 H.P., auxiliary motor giving 10 knots, complement 289.
BARRAGE CRAFT.—R 1-16 (1933-4), 85 ft. 44 tons, 700 H.P., 17½ knots, 1 1-pr. gun; R 17-20 (1935), R 21-25 (1938), R 26-30 building, 90 tons. Mining and Barrage vessels MT 1 and 2, 550 tons, 10 knots; 8 small craft (1906-15), 70 tons, 9 knots; I-1V (1936), 120 tons.
TARGET SHIPS.—*Zähringen* (ex-battleship), 11,800 tons, 13 knots; *Heesen*. Wireless controlled.
TARGET TUGS AND CONTROL SHIPS.—*Pfeil*, *Komet*, and *Blitz*, 650 tons. 30 knots ex T.B.'s. *Blitz* is control ship for *Zähringen*.
DEPOT SHIPS.—*Teigtau* (1934), 1,970 tons, 17½ knots, 2 3-5-in., 4 m.g. *Saar* (1934), 2,710 tons, 16 knots, 3 4-1-in., 4 m.g. *Weichsel* (1923), 3,950 tons, 10½ knots, 10 knots.
Donau, 10 knots. *Zieten* (1919), 550 tons, 14 knots, 1 4-in., 2 m.g. Two in number building and 4 projected.
TORPEDO RECOVERY VESSEL.—*Orkan* (1916), 470 tons, 10 knots.
PARENT SHIPS.—*Zietch* (1919), 541 tons, 17 knots, 1 4-1-in. gun.
SURVEYING VESSELS.—*Meteor* (1924), 1,150 tons, 14 knots, one 3-4-in. Two surveying launches, 90 tons.
MINESWEEPERS.—26 in number (1917-1919), 475-525 tons, 1,800 H.P., 16 knots, 1 4-1-in. gun. M 1-24, 600 tons, 2 4-1-in. guns, 1 1-pr.; M 25-36, building.
OLIFERS.—*Samland*, 10,111 tons; *Brosen*, 2,498 tons, 8 knots; *Wollin*, 3,429 tons, 9½ knots; *Norderney*, 1,110 tons, 7 knots.
M.T.B.—Depot ship, *Tanga*.

GREECE.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal.	Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Heavy.					Second.	Ay.	Guns.	Torpedo Tubes.
cr.	Giorgios Averoff *	9801 tons.	462 ft.	69 ft.	24½ ft.	19,000 (21,500) B.	Leghorn (Orlando)	1910	1911	1,100,000 £.	8-3½ in.	1½ in.	7 in.	7 in.	8-6½ in.	7 in.	4 9-2-in., 8 7-16-in., 16 3-in., 4 3-pr., 2 3-in. A.A., 2 M. 18-in.	3 (sub.) 18-in.	knots. 22½ (24½) †	—	1500 tons.	620
cr.	Helle † (ex Fei-Hung)	2083 tons.	322 ft.	39 ft.	14 ft.	6000 P.T. (G.)	Camden, N.J.	1912	1913	240,000	..	1½ in.	..	..	..	..	3 6-in., 1 3-in. A.A., 100 mines	2 a.w. 18-in.	20 knots. 20 †	600 tons.	280	

* Retubed and refitted 1927.

† † Repaired and converted to oil burning in France and fitted as a minelayer in 1923.

TRAINING SHIP.—Ares, 1,870 tons, 11 knots, four 8-in. guns, completed at Chantiers de la Méditerranée, la Seyne, 1929.

REPAIR SHIP.—Hephestos (1920), 4,519 tons gross, 11½ knots, four 4-in. A.A. guns, four 4-in. A.A.

SURVEYING SHIP (old sloop).—Nautilus, 400 tons, 11 knots, two 8-in. guns.

C.M.B's., T1 and T2, Thornycroft type, 55 ft., 37 knots, two Lewis guns 2 t.r., 4 built at Venice, for Customs Service; T3 and T4, 66 ft., 43 knots, 32 tons, 2 t.r., building.

WATER CARRIER.—Avra, 1,221 tons, 12 knots.

DEPOT SHIP.—Hephestos, 4,549 B.R.T., 11½ knots.

DESPATCH VESSELS AND MINELAYERS.—Korgialenios, 380 tons, 13 knots, 50 mines; Tenedos, 450 tons, 13 knots, 40 mines.

MINESWEEPERS.—Nestos, Alvalmon, Axios, Strymon.

ITALY.—Battleships.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power, Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel.		
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Guns.	Heavy Gun.		Second-ary.	Torpedo Tubes.	Coal.	Oil.
b.	Roma	35,000	774 0	106 6	28	160,000	Trieste	Bdg.	..	£	in.	..	in.	..	in.	..	9 15-in., 12 6-in., 12 3-5-in., 20 A.A., 2 catapults, 3 aircraft	..	32	tons.	..
b.	Impero	35,000	774 0	106 6	28	150,000 (G.T.)	Genoa (Ansaldo)	1987	..	..	10	..	..	..	..	..	9 15-in., 12 6-in., 12 3-5-in. A.A., 2 catapults, 3 aircraft	..	31	..	1600
b.	Littorio	35,000	774 0	106 6	28	34,000 P.T. Y.	Genoa (Ansaldo)	1913	1916	..	10-4 K.S.	1½	6 K.S.	9½ K.S.	6 K.S.	13 12-in., 16 5-in., 18 8-in., 6 3-in. A.A., 2 2-pr., 6 M., 4 L., 1 15-in. catapult, 1 aircraft	2 (sub.)	21	1200	1074	
b.	Andrea Doria†	23,622	575 9	92 0	29	31,000 P.T. Y.	Castellam-mare	1913	1915	..	10-4 K.S.	1½	6 K.S.	9½ K.S.	5 K.S.	10 12-6-in., 12 4-7-4-in., 8 3-9-in. A.A., 20 A.A. M.G., 2 catapults, 4 aircraft	..	27	2000	1200	
b.	Giulio Cesare	23,622	629 0	92 0	29	..	Genoa (Ansaldo)	1911	1914	..	10-4½ K.S.	1½	6 K.S.	9½ K.S.	5 K.S.	4 10-in., 8 7-5-in., 10 3-in., 6 3-in. A.A., 2 3-pr., 6 M., 2 L.	2 (sub.)	18	1556	689	
§	San Giorgio	9232	462 2	69 0	24½	18,000 recip. Bl.	Castellam-mare	1908	1910	..	8-3 K.S.	1½	7 K.S.	7-6 K.S.	7 K.S.	..	..	22	115	1550	
§	San Marco**	8600	462 2	69 0	22½	13,000 P.T. (B.)	Castellam-mare	1908	1911	..	8-3 K.S.	1½	7 K.S.	7-6 K.S.	7 K.S.	..	..	18	96	689	

† Undergoing reconstruction as Conte di Cavour.

§ Armoured Cruisers, formerly classified as Battleships, 2nd class, in Italian Official Lists.

** Converted into target ship under wireless control. Armament removed.

ITALY.—Cruisers, &c.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.	Armament.	Speed.	Fuel. Coal. Oil.	Complement.
		tons.	ft. ins.	ft. ins.	ft.					£	Side. Deck.	Gun Position.	Torpedo Tubes.	knots.	tons.
Improved Condottieri Class	Duca degli Abruzzi	7874	613 9	61 0	17	100,000 (G.)	{ Odero-Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1935	1936	..	Abt. 6	..	6	35	1200
	Giuseppe Garibaldi	7283	610 3	57 4	16 4	110,000 tur.	{ Ansaldo, Genoa Orlando, Leghorn	1935	1936	..	About 4½	..	21"	36½	600
Attendolo Class	Eugenio di Savoia	6941	597 9	54 6	14 2	106,000 P.T.	{ Ansaldo, Genoa Trieste	1934	1935	..	..	..	4	37	oil
Condottieri Class	Filberto Duca d'Aosta	10,000	646 3	67 8	18 0	150,000	{ Ansaldo, Genoa	1932	1933	..	Abt. 3	..	8	36	oil
Modified Trento Class	Raimondo Montecuccoli	5008	554 6	50 10	14	95,000 (G.)	{ Ansaldo, Terni, Spe- zia	1932	1933	..	2	..	4	37	1000
Condottieri Class	Muzio Attendolo	10,000	599 9	67 7	19 6	95,000 (G.)	{ Odero-Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	2	..	21"	32	800
Zara Class	Armando Diaz	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Luigi Cadorna	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	2	..	—	32	800
Condottieri Class	Pola	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Gorizia	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Zara	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Fiume	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Alberto di Gius- sano	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Alberico da Bar- biano	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Bartolomeo Col- leoni	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800
Condottieri Class	Giov. delle Bande Nere	5069	555 5	50 10	14 2	95,000 (G.)	{ Ansaldo, Terni, Or- lando Spezia Cantieri Rinalti dell' Adriatico, Trieste	1931	1932	..	About 6	..	—	32	800

ITALY.—Cruisers, &c.—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.	Armament.	Speed.	Fuel. Coal. Oil.	Complement.		
		tons.	ft. ins.	ft. ins.	ft.					£	Side. Deck.	Gunn Position.	Guns.	Torpedo Tubes.	knots.	tons.	
Trento Class	Trento . . .	{ 10,000	645 0	67 9	18	150,000 (G.)	Orlando, Leghorn	1926	1929	..	In. 2½ 2	In. ..	{ 8 8-in., 16 8.9-in. A.A., 4 1.57-in., 8 5-in. A.A. M., 1 catapult, 2 seaplanes } (D.) 21"	8 a.w.	35	—	1000
	Trieste † . .							1927									
I. c.	Bari (ex-German Pillau)	3248	443 11	44 7	13½	28,000 tur.	Danzig (Schichau)	1914	1915	..	3 1½-¾	1	8 5.9-in., 3 3-in. A.A., 3 M., 120 mines, 2 aircraft	2	27.5	984	872
I. cr. †	Quarto . . .	2303	431 9	42 2	13½	29,000 P.T. Bl.	Venice . . .	1911	1912	..	1½-¾	..	6 4.7-in., 4 3-in., 2 1.57-in. A.A., 3 M., 126 mines	2 a.w.	28	49	256
I. cr.	Taranto (ex-German Strassburg)	3184	455 0	42 2	12½	27,000 P.T. T.S.	Wilhelmshaven	1911	1914	416,840	4-2½ 2	2	7 5.9-in., 2 3-in. A.A., 3 M., 120 mines	2	21	1200	373
S. c.	Miraglia* . . .	4882	397 0	49 3	17	12,000 P.T.	Spezia . . .	1923	1927	..	..	..	4 4-in. A.A., 4 M., 2 catapults, 16 planes	—	21.5	—	300
I. cr.	Cornelio Silla Paolo Emilio Attilio Regold Scipione Africano Cato Mario Claudio Tiberio Pompeo Magno Ottaviano Augusto Ulpio Traiano Claudio Druso Vipsanio Agrippa Giulio Germanico	{ 3360	444 3	44 9	13	120,000	{ Genoa . . . Leghorn . . . Spezia . . . Ancona . . . Palermo . . . Trigoso . . . Naples . . .	Bldg.	..	..	..	..	8 5.3-in., 6 2.5-in., carries mines	8 21"	21.5	—	440

* Ex-merchant ship, taken over on the stocks. Aircraft transport.

† Classified as Scouts in Italian Lists.

Quarto is no longer on the effective list.

‡ Fleet Flagship.

COMBINED MINELAYERS AND MINERSWEEPERS.—Fasana, Buccari, Durazzo, and Pelagosa, completed 1926, 531 tons, 10 knots (I.C. machinery), 1 3-in. gun; 54 mines; Azio, Legnano, Lepanto, and Ostia, completed 1928-7, 615 tons, 15 knots (recip.), 2 4-in., 1 3-in., 80 mines; Cotrone, Viesti, 859 tons, 185 ft., 1,600 H.P., 14 knots, 2 4-in. guns.

MINELAYERS.—Laura, Rovigno, and Albona (ex-Austrian), 112 tons, 11 knots, 1 3-in.

MINERSWEEPERS.—38 in number, 150 tons, 14 knots, 1 3-in. gun, 4 in No., 620 tons, 138 ft., 9 knots, 2 3-in. guns; G. Bert, P. Mattenucci, M. Sonzini (1924), 620 tons, 9 knots, 2 3-in.

OIL TANKERS.—Tarrasio, 10,910 tons, 11 knots, 4 4-7-in. 2 3-in.; Stige, 1,342 tons, 8 knots, 1 4-7-in., 1 3-in.; Urano, 10,550 tons, 11 knots, 2 4-7-in., 2 3-in.; Brennero, 9,800 tons, 11 knots, 4 4-7-in., 2 3-in. (fitted with water protection); Prometeo, 1,080 tons, 11 knots, 2 3-in.; Nettuno, Giove, 9,555 tons, 14 knots, 3 4-7-in., 2 3-in.; Niobe, 3,180 tons, 11 knots, 3 3-in.; Cocito, Lete, 1,162 tons, 10 knots, 3 3-in., Cereve, 2,530 tons, 10 knots, 1 4-7-in., 2 3-in.; Bronte, 8,240 tons, 14 knots, 2 3-in.; Marte, 10 knots, 2 3-in.

RIVER GUNBOATS.—S. Caboto (1912), 778 tons, 13 knots, 6 3-in. guns; E. Carlotto (1918), 180 tons, 14 knots, 2 3-in. A.A. guns.

ESCOPT GUNBOATS.—A. Badlo, T. Farinati, E. Giovannini, C. del Greco, and A. Vitturi (1922), 182 tons, 23 knots, 2 4-in. guns, 2 T.T.

SURVEYING VESSELS.—Ammiraglio Magnaghi (1914), 1506 tons, 14 knots, 4 3-in.; Cariddi (1916), 330 tons, 10 knots, 1 3-in. gun; Cherso, 3,968 tons, 10 knots, 4 4-7-in. guns.

PATROL VESSELS.—Cirene (1912), 384 tons, 10 knots, 2 3-in.; Corini (1912), 290 tons, 12 knots, 2 3-in.; Rimini (1912), 319 tons, 9 knots, 1 3-in. gun; Gallipoli (1911), 310 tons, 10 knots, 2 3-in. guns; Otranto (1911), 290 tons, 10 knots, 2 3-in. guns; Alula (1912), 308 tons, 13 knots, 1 3-in. gun; Valdrosio (1913), 340 tons, 10 knots, 1 3-in.; Palmarola (1902), 472 tons, 8 knots, 1 3-in.; Aurora, 935 tons, 14 knots, 2 3-in.

TRAINING SHIPS.—Cristoforo Colombo (Castellamare, 1928), 2,787 tons, 10 knots (Diesel-electric) 4 3-in. guns; Amerigo Vespucci (Castellamare, 1931), 3,543 tons, 1,800 H.P. (Diesel-electric), 11 knots, 4 3-in. A.A.

SUBMARINE DEPOT SHIPS (Sloops).—Volta and Padinotti (1924), 1,730 tons, 19 knots, 4 3-in. A.A.

CABLE SHIPS.—Citta di Milano (5,300 tons), 10 knots; Glasone, 1,192 tons, 250 ft., 15 knots.

TUGS.—65 in number.

WATER CARRIERS.—Dalmasia, Istria, 2,900 tons, 10 knots, 1 4-7-in., 1 3-in.; Flegelonte, 1,162 tons, 9 knots, 3 3-in. A.A.; Verde, Pagano, 1,432 tons, 9 knots, 1 4-7-in., 1 3-in. A.A.; Ticino, 9 knots, 2 3-in.; Isonzo, Po, Volturco, 11 knots, 2 4-in., 4 m.g.; Sorivia, Tiro, 9 knots, 4 m.g.

MOTOR TORPEDO BOATS.—M.A.S. 96, 188, 204, 206, 210, 212, 213, 216, 222, 228, 230 (1916-1919), 12 tons, 24-26 knots, 2 18-in. T.T.; M.A.S. 418, 422 (1922), 21 tons, 28 knots, 2 18-in. T.T.; M.A.S. 423-437, 15 tons, 45 knots, 2 18-in. T.T., 5 depth charges; M.A.S. 438-441, 35 tons; M.A.S. 501-516, 47 knots, 2 18-in. T.T., 6 depth charges; 20 others.

TRANSPORT SHIPS.—Lussini, Gheroso, 3,988 tons, 10 knots, 4 4-7-in.; Tripoli, 2,460 tons, 8 knots; Panigaglia, Valletunga, Bufoluto (Ammunition transport ships), 916 tons, 11 knots, 2 3-in.; Valgiubba, 8,720 tons, 8 knots; Enrichetta, 8,360 tons, 9 knots.

LIGHTHOUSE TENDERS.—Lante, 235 tons, 12 knots, 2 3-in.; Bianco, 258 tons, 11 knots, 2 3-in.; Lutti, 266 tons, 12 knots, 1 3-in.; Levanzo, 226 tons, 11 knots, 2 3-in.; Scilla, 350 tons, 9 knots, 1 3-in.; Lido, 226 tons, 12 knots, 1 3-in.

MONITORS.—Faa di Bruno (1917), 2,798 tons, 3.3 knots, 2 15-in., 6 3-in.; Monte Grappa, Montello (1919), 605 tons, 7 knots, 1 12-in., 2 3-in.; Monte Cengio, Monte Noveano (1919), 502 tons, 7 knots, 1 12-in., 2 3-in.

TARGET SHIP.—San Marco, Old Cruiser.

ESCOPT VESSEL.—Eritrea, 2,172 tons, 20 knots, 4 4-7-in. guns, fitted for minelaying.

JAPAN.—Battleships.

Type.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type and Boilers.	Where Built	Date of Launch.	Cost.	Armour				Armament.		Speed.	Fuel.	Complement.	
		tons.	ft. ins. ft. ins.	ft. ins. ft. ins.						Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position.	Torpedo Tubes.	Coal.		
	Fuso §	29,330	673	094	028	6	Kure	1914	1915	..	12-4	8	..	..	12 6-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	2 (sub.) 27-in.	22.5	4500	1300
Fuso Class	Hyuga *	29,990	683	094	028	8	Nagasaki (Mitsubishi)	1917	1918	..	12-4	8	..	..	12 6-in. A.A., 2 M., 4 L., 3 sea-planes, 1 catapult	6 (sub.) 27-in.	23	4500	1300
	Ise *	29,990	683	094	028	8	Kobe (Kawasaki)	1916	1917	..	12	8	..	..	12 6-in. A.A., 2 M., 4 L., 3 sea-planes, 1 catapult	6 (sub.) 27-in.	23	4500	1300
	Yamashiro §	29,330	673	094	028	6	Yokosuka	1915	1917	..	12	8	..	..	12 6-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	6 (sub.) 27-in.	22.5	4000	1272
	Haruna §	29,330	704	095	027	6	Kobe (Kawasaki)	1913	1915	..	8-3	6	..	..	8 14-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4 (sub.) 27-in.	26	—	1250
Kongo Class	Kirishima †	29,830	704	092	627	6	Nagasaki (Mitsubishi)	1913	1915	..	8-3	6	..	..	8 14-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4 (sub.) 27-in.	26	—	1250
	Kongo †	29,830	704	092	627	6	Barrow	1912	1913	2,500,000	8-3	6	..	..	8 14-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4 (sub.) 27-in.	26	—	1250
Nagato Class	Mutsu *	32,720	700	095	030	0	Yokosuka	1920	1921	..	12-9	..	..	..	8 16-in. A.A., 3 M., 3 sea-planes, 1 catapult	4 (sub.) 27-in.	23	1600	1304
	Nagato †	32,720	700	095	030	0	Kure	1919	1920	..	12-9	..	..	..	8 16-in. A.A., 3 M., 3 sea-planes, 1 catapult	4 (sub.) 27-in.	23	1600	1304

NEW CONSTRUCTION. The number of battleships building in Japan is not known, but probably four of 40,000 tons with 9 16-in. guns.

ARMoured CRUISERS now rated as CONVERTED CRUISER SHIPS (1st class), completed 1899-1904: Kasuga, 7080 tons, 20 knots, 1 10-in., 2 8-in., 14 6-in.; Yakumo, 9010 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Adzuma, 8640 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Idzumo and Iwate, 9180 tons, 20 knots, 16 knots, 4 8-in., 14 6-in., 5 3-in.; Asama, 9240 tons, 21½ knots, 4 8-in., 12 6-in., 5 3-in.; Tsuchima (2nd class), 3120 tons, 20 knots, 6 6-in., 8 3-in., 1 3-in. A.A.

* Reconstructed 1936.

§ Modernised 1934.

† Modernised 1928-1931, including fitting of bulges and new foremast, and conversion to oil burning. Hiyei of this class has been de-militarised and converted to a training ship in accordance with London Naval Treaty.

|| Reconstructed 1935.

JAPAN.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.	Torpedo Tubes.	Speed.	Fuel.		Complement.
											Side Deck.	Gun Position.				Coal.	Oil.	
A.C.	Akagi *	26,900 tons	763 b.p.	92 ft.	21 2 ft. 10 in.	131,200 (G.)	Kure	1925	1927	£ ..	in.	in.	10 8-in., 12 4-7-in. A.A., capacity for 50 aircraft. Carries about 30 aircraft.	—	knots 28.5	— tons 3900	—	..
A.C.	Hosho †	7470	510 b.p.	48 62	15 0	30,000 (G.)	Tsurumi (Asano)	1921	1922	£ ..	..	..	4 5-5-in., 2 3-in. A.A., 26 aircraft	—	25	— 2760	—	550
s.c.	Kamoi §	17,000	495	67	28 0	8,000 turbines and electric drive	New York S.B. Co.	1922	1922 (converted 1933)	£ ..	..	..	2 5-5-in., 2 3-in. A.A., 10 seaplanes	—	15	— 4000	—	..
A.C.	Kaga †	26,900	715 b.p.	102½	22 1	91,000 (G.)	Kobe (Kawasaki)	1921	1928	£ ..	..	..	10 8-in., 16 4-7-in. A.A., capacity for 60 aircraft. Carries about 30 aircraft.	—	knots 23	— 5300	—	..
s.c.	Notoro §	14,050	455 b.p.	58	26 6	5,850 recip.	Kobe (Kawasaki)	1920	1920	£ ..	..	..	2 4-7-in., 2 3-in. A.A., 16 seaplanes	—	12	— 1000	—	..
A.C.	Ryujo	7100	548	60' 8"	15 0	40,000 (G.)	Yokohama	1931	1933	£ ..	..	..	12 5-1-in., A.A., 24 aircraft	—	25	oil	—	600
A.C.	Soryu	10,050	698	68' 4"	16 6	60,000 (G.)	Kure	1935	1937	£ ..	..	..	12 5-in., A.A., 40 aircraft	—	30	..	..	..
A.C.	Koryu	9,000	..	..	..	15,000 tur. & t.b.	Yokosuka	Bldg. 1936	1938	£ ..	..	..	† 5-in. A.A.	—	20	..	..	..
s.c.	Chitose (Titose)	..	..	..	..	..	Kure	1937	..	£ ..	..	..	4 5-in. A.A., 12 M., 3 seaplanes	—	20	..	..	..
s.c.	Chioda (Triyoda)	..	..	..	..	..	Kure	1937	..	£ ..	..	..	..	—	..	..	..	..
s.c.	Mizuo (Misuko)	..	..	..	..	..	Kure	1938	..	£ ..	..	..	..	—	..	..	..	..
s.c.	Taigei	10,000	617 w.l.	59	17	13,000 (D.)	Yokosuka	1933	1934	£ ..	..	..	..	—	20	..	..	413

* Designed as a battle cruiser. † Fitted with gyro-stabiliser. ‡ Designed as a battleship. § Converted from oilers. Seaplane carriers. Other vessels carry landplanes. New construction—probably five in number.

JAPAN.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost	Armour.		Armament.		Speed.	Fuel.	Complement.
											Side Deck.	Gun Position.	Guns.	Torpedo Tubes.			
Mogami Class	Tone	8500	614 3	63·1	14·7	90,000	Nagasaki	1937	Bldg.	£	in.	in.	12 6·1-in. A.A., 4 aircraft, 1 catapult	12 21-in. a.w.	33	tona.	..
	Tikuma	8450	w.l.					1938		..	2	2	.. ..	.. (T.)	33	..	..
	Mogami						Kure	1934	1935	2,500,000 estimated	2	..	15 6·1-in. A.A., 2 catapults, 4 aircraft	12 21-in. a.w.	33	..	..
	Mikuma	8500	640	59½	14·9	90,000 (G.)	Yokosuka	1934	1936		2	..	10 8-in., 4 4·7-in. A.A., 2 M. 2 catapults, 4 seaplanes	12 21-in. a.w.	33	2000	692
	Suzuya						Kawasaki	1936	1937				..	..			
Myoko Class	Kumano						Nagasaki	1931	1932		3-4	..	10 8-in., 4 4·7-in. A.A., 2 M. 2 catapults, 4 seaplanes	8 21-in. a.w.	33	—	692
	Chokai.	9850	650	62½	16½	100,000 (G.)	Kobe	1930	1932		3-6	..	..	..			
	Maya						Kure	1930					..	..			
	Atago						Yokosuka	1928	1929		3-4	..	10 8-in., 4 4·7-in. A.A., 2 M. 2 catapults, 4 seaplanes	12 21-in. a.w.	33	—	692
	Takao						Kure	1927	1928				..	..			
Nachi Class	Ashigara						Kobe	1926	1927				6 8-in., 4 4·7-in. A.A., 10 M. 1-2 planes, 1 catapult	12 21-in. a.w.	33	400	804
	Haguro	10,000	640	62½	16½	100,000 (G.)	Nagasaki	1926	1927		..	..	6 8-in., 4 4·7-in. A.A., 6 M. 2 planes, 1 catapult	12 21-in. a.w.	33	1400	
	Myoko						Yokosuka	1925	1926		..	..	..	..			
	Nachi						Kure	1925	1926		..	..	..	..			
													..	..			
Furutaka Class	Kinugasa						Kawasaki, Kobe	1926	1927				8 6-in., 2 3-in. A.A., 2 M. 2 M.	3 18-in. a.w.	26	900	410
	Aoba	7100	595	50½	14½	95,000 (G.)	Nagasaki	1926	1927		..	..	7 5·5-in. A.A., 2 M. 1 seaplane, 1 catapult, 80 mines	8 21-in. a.w.	33·0	800	450
Chikuma Class	Furutaka							1925	1926				..	..			
	Kako						Kawasaki, Kobe	1925	1926		..	..	..	..			
	Hirado	4400	475	46½	16½	22,500 P.T.	Kobe	1911	1912		2½	..	..	..			
	Yahagi						Nagasaki	1923	1925				..	..			
								Uraga	1921	1923		2	..	..	..		
Natori Class	Abukuma						Uraga	1921	1923				..	..			
	Isuzu	5170	535	47½	15½	70,000 (G.)	Sasebo	1922	1922				..	..			
	Nagara						Nagasaki	1922	1922				..	..			
Natori						(Mitsubishi)							..	..			

Natori Class	Yura	5170	535	47½	15½	70,000 (G.)	Sasebo	1922	1923	2	7 5.5-in. 2 3-in. A.A., 2 m. 1 seaplane, 1 catapult, 80 mines	8 21-in. a.w. (D.)	33.0	300 1260	450
Sendai Class	Kinu						Kawasaki	1922	1922	—	..	..	..	..	..
	Jintsu						Kawasaki	1923	1925	..	..	..	..	..	..
	Naka	5195	535	47½	15½	90,000 (G.)	Yokohama	1925	1925	2	7 5.5-in. 2 3-in. A.A., 5 m. 1 seaplane, 1 catapult, 80 mines	8 21-in. a.w. (D.)	33.0	300 1260	450
	Sendai						Nagasaki	1923	1924	—	..	..	..	..	..
Kuma Class	Kiso						Nagasaki	1920	1921	—	..	..	..	..	..
	Kitakami						Sasebo	1920	1921	—	..	..	..	..	..
	Kuma	5100	535	47½	15½	70,000 (G.)	Sasebo	1919	1920	2	7 5.5-in. 2 3-in. A.A., 2 m. 1 seaplane, 80 mines	8 21-in. a.w. (D.)	33.0	300 1260	439
	Oi						Kobe	1920	1921	—	..	..	..	..	..
Tenryu Class	Tama						Nagasaki (Mitsubishi)	1920	1921	—	..	..	..	..	..
	Tatsuta	3230	468	40½	13	51,000 (G.)	Sasebo	1918	1919	..	4 5.5-in. 1 3-in. A.A., 2 m. Fitted for minelaying	6 (T.)	31	— 900	332
—	Tenryu						Yokosuka			..	..	..	..	..	..
	Yubari	2890	465	39½	11½	57,000 (G.)	Sasebo	1923	1923	..	6 5.5-in. 1 3-in. A.A., 2 m. 34 mines	4 21-in. a.w. (D.)	33	— 820	328

MINELAYERS.—Katsuriki (1917), 1540 tons, 13 knots, 3 3-in., 150 mines; Itsukushima (Uraga, 1929), 1970 tons, 16 knots, 3000 H.P. (Diesel), 3 5.5-in., 2 3-in. A.A., 250 mines; Tokiwa, 9240 tons, 21 knots, 2 8-in., 8 6-in., 3 3-in., and 19 smaller vessels, 300–400 tons, about 12 knots, 2 3-in., 45 mines. Okinoshima (1936), 4400 tons, 9000 H.P., 20 knots, 4 5.5-in., 4 m.g.

MINESweepers.—Nos. 1, 2, 3 (1923), No. 4 (1925), and Nos. 5, 6 (1929), 615 tons, 20 knots, 2 4.7-in., 1 3-in. A.A. Nos. 13–14 (1933), and Nos. 15–18 (1935–36), 492 tons, 2 4.7-in. guns, and Nos. 19–24 are projected.

GUNBOATS.—Saga (1912), 685 tons, 15 knots, 1 4.7 in., 3 3-in. A.A.; Ataka (1922), 725 tons, 16 knots, 2 4.7-in., 2 3-in. A.A.; Yodo, 1320 tons, 22 knots, 2 3-in. RIVER GUNBOATS.—Futami (1930), Atami (1929), 170 tons, 16 knots, 1 3-in. gun; Kataca, Hira, Hodzu, Seta (1923), 305 tons, 16 knots, 2 3-in. A.A.; Toba (1911), 215 tons, 15 knots, 2 3-in.; and Kotaka (1930), 50 tons, 15 knots, 5 m.g.

SUBMARINE DEFÖT SHIPS.—Taigei (1934), 10,000 tons, 689 feet, 13,000 H.P., 20 knots, 4 5-in. A.A.; 3 seaplanes, now used as seaplane carrier; Chogei (1924), Jingei (1923), 5160 tons, 16 knots, 4 5.5-in., 1 seaplane; Komahashi (1914), 1125 tons, 13.9 knots, 2 3-in., 1 3-in. A.A.; Karasaki (1896), 9750 tons, 13 knots, 1 3-in., 1 3-in. A.A.

ANTI-SUBMARINE NETLAYERS.—Yayeyama (1932), 1135 tons, 4800 H.P. (reciprocating machinery), 20 knots, 2 4.7-in. A.A.; Shirataka (1929), 1345 tons, 16 knots, three 4.7 in. A.A. guns. Tsuabane and Kamone (1929), 450 tons, 19 knots, 1 3-in. Matsushima, Sarushima and Nasami, 443 tons, 19 knots, 2 3-in. guns.

SUBMARINE CHASERS.—Nos. 1, 2, 300 tons, 24 knots; No. 3, 270 tons, 20 knots; 51–53, 170 tons, 23 knots, 4 m.g. REPAIR SHIP AND SUBMARINE SALVAGE SHIP.—Asahi (ex-Battleship), 12,000 tons, 18 knots. TARGE SHIP.—Akashi, building. Salvage Ships. Cable Ships. TRANSPORTS AND OTHER AUXILIARIES.

ICEBREAKERS.—Otomari (1921), 2330 tons, 13 knots, 1 3-in. ARMED OILERS.—Takesaki and Taurugisaki (1937), 12,000 tons, 19 knots, 4 5-in. guns, Naruto, Hayayono, Ondo, Iro, Tsurumi, Shiriya, Sata, Erimo (1920–23), 14,050 tons, 12 knots, 2 5-in., 2 3-in. A.A. SUNDRIES (1918), 8800 tons, 14 knots, 2 4.7 in., 2 3-in. A.A. SURVEYING SHIP.—Koshu, 2080 tons, 10.3 knots, 2 3-in.

TRAINING SHIPS.—Hiyei, 19,500 tons, 18 knots, 6 14-in., 16 6-in., 4 5-in. A.A.; 4 3-in. A.A.; Skikishima, 11,275 tons; Fuji, 9179 tons. TRANSPORTS.—Mamiya, 15,820 tons, 14 knots, 2 5.5-in., 2 3-in. A.A.; Muroto, Noshima, 8215 tons, 12½ knots, 2 4.7-in.

NETHERLANDS.

Class.	NAME.	Standard Displacement (Extrême.)	Beam.	Draught.	Horse-power, Type and Boil. rs.	Where Built.	Date of Launch.	Cost.	Armour.				Armament.		Speed.	Fuel.	Complement.	
		tons.	ft.	ft.			Date of Completion.	£	Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position.	Torpedo Tubes.	Coal.	Oil.	
cr.	De Ruyter	6450	56 ⁰	51	16	66,000 P.T. Y.	Rotterdam (Wilton-Fijenoord)	1935 1936	..	in. 2	in. 14	..	..	in. ..	..	32	1000	435
cr.	Java *	6570	509 ¹	52 ¹	18	72,000 tur.	Amsterdam (Flushing)	1921 1925	..	3	1	1	..	4	..	..	—	525
"	Sumatra *	530	172 ¹	28	9 ¹	1500 Diesel	Amsterdam	1920 1926	..	2	3	..	..	..	..	..	—	63
a.g.b.	Brinio	4371	317	50	19	6282 Y.	Amsterdam	1912 1914	..	K.S. 6	2	..	..	10	3	—	—	302
"	Grino	5644	333	56	20 ¹	8008 Y.	Amsterdam	1909 1910	..	H.N.S. 6-4	2	..	..	H.N.S. 10	H.S. 4	—	—	350
"	Hertog Hendrik	4445	321 ¹	50	19	6396 Y.	Amsterdam	1906 1908	347,500	H.N.S. 6-4	2	..	..	10	6	—	—	351
c.d.s.	Soerabaja	3350	433	40 ¹	15	56,000	Amsterdam	1937 1938	..	H.N.S. 2	1	..	..	..	..	—	—	290
cr.	Jacob van Heemskerck	8300	507	56	16 ¹	70,000	Rotterdam (Wilton-Fijenoord)	Bldg. Bldg.	..	..	..	..	..	..	..	—	—	290
"	Tromp	8300	507	56	16 ¹	70,000	Rotterdam (Wilton-Fijenoord)	Bldg. Bldg.	..	..	..	..	..	..	..	—	—	290
"	Heemsherk	8300	507	56	16 ¹	70,000	Rotterdam (Wilton-Fijenoord)	Bldg. Bldg.	..	..	..	..	..	..	..	—	—	290
"	De Zeven Provinciën	8300	507	56	16 ¹	70,000	Rotterdam (Wilton-Fijenoord)	Bldg. Bldg.	..	..	..	..	..	..	..	—	—	290
"	Kijkduin	8300	507	56	16 ¹	70,000	Rotterdam (Wilton-Fijenoord)	Bldg. Bldg.	..	..	..	..	..	..	..	—	—	290

Ships marked * above are in the East Indies Squadron.

GUNBOATS.—(Indian Military Marine): Soemba, Flores (1926-7), and Johann Maurits van Nassau (1933), 1457 tons, 15 knots, three 5.9 in., one 3-in. A.A., 2 m., three building.

MINELAYERS.—Nautilus (1930), used for fishery protection, 800 tons, 14 knots, two 3-in., two 1-pr., 2 m.; Douwe Aukes & Van Meerlant (1922), 687 tons, 13 knots, three 3-in. A.A., 2 m., 130 mines; Medusa and Hydra (1911), 593 tons, 11.5 knots, three 3-in., one 1-pr., 1 m., 65 mines; six old vessels, 240 tons, 7 knots. Willem Van Der Zaan, 1350 tons, 15 knots, 2 4.7-in., 4 1.5-in., 120 mines. Minelayers attached to Indian Military Marine; Krakatau (1924), 982 tons, 16 knots, two 3-in. A.A., 4 m., 150 mines, 1 catapult, and 1 seaplane; Pro Patria (1923), 534 tons, 10 knots, one 3-in. A.A., 2 m., 80 mines; Prins Van Oranje and Gouden Leeuw (1932), 1291 tons, 15 knots, two 3-in., 2 1.5-in., and 1 aircraft; Serdaag, 680 tons, 13 knots, 2 1-pr.; Jan Van Braker, 1350 tons, 15 knots, 2 3-in., 1 1-pr.

MINESWEEPERS.—I-IV., 200-235 tons; (for the Indian Military Marine): A, B, C, D (1930), 179 tons; and one 1600 tons building. Jan Van Amstel, Abraham van Der Hulst, Jan van Gelder, Pieter Florisz, Willem van Ewijk, Erand Dubois, Abraham Crijmsen, Pieter de Bitter (1937), 525 tons, 15 knots, 13-in., 4 m., six more projected. SURVEYING VESSELS.—Eilerts de Haan, Hydrograaf, and in the Indian Military Marine, Tydeman, and Willebrod Shellius, 10 knots, 13-in., 1 1-pr.

SUBMARINE DEPOT SHIPS.—Cornelius Drebbel (1915), 688 tons, 170 h.p. (Diesel), 6 knots.

GUNNERY TRAINING SHIPS.—Old light cruiser Gelderland (1900), 3512 tons; 7-8 knots, 1 4.7-in.

OLD GUNBOATS (1877-9): Heffring, Braga, Tyr and Frey, 244 tons, 7-8 knots, 1 4.7-in.

POLICE AND CUSTOMS VESSELS.—Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1000 tons.

MOTOR TORPEDO BOATS.—T.M. 1, 2, 4 (1929) Thornycroft, 12 tons, 37 knots, 4 m., 2 17.7-t.t.; T.M. 5, 6 (building). 30 M.T.B.'s were being built in 1939.

Class.	NAME.	Displacement.			Beam.	Draft.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.				Armament.		Speed.	Fuel.	
		Normal.	(Extrm.)	Length.								Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position.		Torpedo Tubes.	Coal.
c.d.s	Eidsvold { Norge	4166	310½	50½	17½	4500	Elswick	1900	1901	350,000	6	2	..	..	..	2 8.2-in., 6 5.9-in., 8 3-in., 2 5-pr.	2 18-in. (sub.) 18-in.	16.5	550	270
"	Harald Haarfagre.	3858	304	48½	17½	4500	Elswick	1896	1898	300,000	7	2	..	..	..	2 8.2-in., 6 3-in.	3 18-in. (sub.) 18-in.	16.5	550	249
"	Tordenskjold*							1897	1899		H.S.	H.S.	H.S.	H.S.	H.S.	2 8.2-in., 6 4.7-in., 6 3-in., 2 5-in. A.A., 6 M.				

FISHERY PROTECTION VESSELS.—Farm (1900), 300 tons, 10 knots; Lynken, 490 tons; Nordkapp and Senja, 273 tons, 13·7 knots; Fridtjof Nansen (1931), 1050 tons, 15 knots, 2000 H.P., two 4-in., two 2-pr.; Heimdal (1892), 660 tons, 12 knots, four 12-pr.; and Michael Sars, 300 tons.

MINELAYERS.—Frøya (1915), 760 tons, 22 knots, 4 1/2-in. A.A., 100 mines; Glommen and Laugen (1918), 335 tons, 9½ knots, 2 3/4-in. A.A., 150 mines; old gunboats, refitted as minelayers: Tyr, Gor, Vidar, Brage, Nor, Vale, and Uller, 230–280 tons, armed with one 4·7-in. and other guns. Olav Trygvason, † minelayer and training ship, built at Horten, 1600 tons, 21½ knots, 6000 H.P., 4 4·7-in. and 1 3-in. A.A. guns, and 2 T.R.A. (18-in.). 280 mines.

SUBMARINE DEPÔT SHIP.—Sarpken, 187 tons, two 9-pr. and one 1-pr.

MINESWEEPERS.—Otra and Rauma, 360 tons, 13·5 knots, one 1·5 in., two buildings.

CABLE SHIP.—Telegraf (1895).

MOTOR TORPEDO BOATS.—Eight building, 25 tons, 40 knots.

* Employed as training ship for Cadets. † 1500 H.P. Diesels, 4500 H.P. turbines. Max. speed on Diesels, 14 knots.

SOVIET UNION.—Battleships.

Class	NAME	Normal Displacement.	Length (Extreme)	Beam.	Draught.	Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel. Coal. Oil.	Complement.	
												Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position. Secondary.	Guns.				Torpedo Tubes.
b.	Paris Commune (<i>ex-Sevastopol</i>) †	tons. 23,000	ft. 594	ft. 87	ft. 27½							in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	October Revolution (<i>ex-Gangut</i>) ||	23,000	594	87	27½	42,000 P.T.	{ Baltic Works }		1911	1915	..	9-5	3	..	..	12-10	6	12 12-in., 16 4·7 in., 10 3-in. A.A., and smaller, 2 seaplanes	4 (sub.) 18-in.	23	2000 1000	1125
b.	Marat (<i>ex-Petro- parlovsk</i>) *	23,606	594	87	31																	
b.	Mikhail Frunze	23,000	594	87	27½				1911	1915												

† Modernised, 1937.

|| Modernised, 1933.

* Modernised, 1931.

Two 35,000-ton battleships projected 16-in. guns.

Aircraft Carriers.

A.C. Stalin (building), 9000 tons, 22 aircraft. Krasni Moryak (1916) 7600 tons, 29 knots, 12 sesoplanes.

SOVIET UNION.—Cruisers.

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.	Speed.	Fuel.	Complement.
											Belt. Deck.	Gun Position.				
cr.	Aurora (ex-S.S.S.R.)†	6750 tons.	416 ft.	55 ft.	21 ft.	11,600	Petrograd	1900	1903	£ ..	in. ..	in. ..	10 5.1-in., 5 6-pr. A.A., 2 m., 125 mines 4 5.1-in., 3 3-in. A.A., 300 mines	2	tons. 18	573
m. cr.	Marti	3500	..	..	..	..	..	..	1936	..	..	..	15 5.1-in., 4 3-in., 8 3-in. A.A., 4 m., 100 mines, 2 flying boats 10 5.1-in., 8 3-in. A.A., 1 aircraft	..	..	..
cr.	Chevonnoyaya-Ukrainia (ex-Ad. Nakhimov)	7600	507½	50½	18½	55,000 P.T.(Y.)	Nikolaev	1915	1923	..	3	..	4 7.1-in., 4 3-in. A.A., 4 4-in. A.A., 4 m., 100 mines, 2 seaplanes	12 21-in.	540 tons.	600
"	Komintern†	6675	440	54½	20½	19,500	Nikolaev	1903	1907	..	1	..	15 5.1-in., 4 4-in. A.A., 4 3-in., 4 m., 2 aircraft, 100 mines	2 23	690	595
"	Krasni Kavkaz (ex-Ad. Lazarev)	7600	535	51½	19	60,000	Nikolaev	1916	1930	..	3	3	9 7.1-in., 4 4-in., 4 1.5-in. A.A., 2 aircraft	(sub.) (a.w.)	540	650
"	Profiintern (ex-Svietlana)	7200	507½	50½	18½	55,000 P.T.(Y.)	Reval	1915	1925	..	3	3	15 5.1-in., 4 4-in. A.A., 4 3-in., 4 m., 2 aircraft, 100 mines	12 21-in.	540	..
"	Kirov	7725	613½	58	18	105,000	Leningrad	1936 Bldg. 1937	1937	..	..	..	6 5.1-in., 6 1.8-in. A.A.	6 34	..	..
"	Maxim Gorki	3000	457½	43	11½	100,000	Leghorn	1937	1939	..	..	..	..	9 3½	..	..
"	Ordzhonikidze															
"	Kuibishev															
"	Tashkent															

† Training ship.

GUNBOATS.—Krazni Vostok, Sun Yat Sen, Lenin, Chicherin, Sverdloff (1910), 950 tons, 11 knots. Bednota, Krasnose-Shamsa, Rabotchi, Proletarii, Krasni Buryat, Krasni Mongol, Krasni Moryak (1907), 11 knots, 190 tons, 2 4.7-in. Krasni Azerbaizham, Lenin (1909), 640 tons, 12 knots, 2 4-in., 2 3-in. Krasnoe Znamya (1895), 1,760 tons, 12 knots, 5 5-in. Krasni Adzharistan, Krasni Krim, Krasnaya Gruzija, Krasnaya Abkhazia (1906), 1,100 tons, 9 knots, 3 5.1-in., fitted for minelaying. MINELAYERS.—9 Vanvarna (1905), 1,711 tons, 12 knots, 2 3-in., 2 1.85-in., 280 mines. 25 Oettabeya (1873), 4,500 tons, 11 knots, 4 3-in., 600 mines. 6 others. MINESWEEPERS.—Mikula, Iskra, 500 tons, 1 3-in. Zapal, Zmei, Klyuz (1911), 180 tons, 11 knots, 1 3-in. Dsalita (1926), 359 tons, 10 knots, 2 3-in. Dorotea (1924), 443 tons, 10 knots, 2 3-in. Udarnick (1917), 185 tons, 10 knots, 1 3-in.; Nos. I-VI (1935), 400 tons, 16 knots, 1 4-in., 1 m.g. 24 others.

ICE-BREAKERS.—Josef Stalin, Kaganovitch, Molotov (1936-38), 10,000 tons, 15 knots, 3 seaplanes. Lenin, 7,000 tons, 19 knots. Krassim (1917), 10,000 tons, 15 knots. Sadico (1913), 1,616 tons, 14 knots. Malgin (1912), 1,535 tons. Sepov, Rusamov, Sibiryakov (1909), 1,140 tons, 12 knots. Yernak (1898), 8,000 tons, 15 knots. Truvor (1896), 1450 tons, 13 knots. Davidov, 1,525 tons, 15 knots. Bobrimiya Nikitich (1916), 1664 tons.

DEPOT SHIPS.—Krasni Gorn (1911), 1892 tons, 11 knots. Serp-I-Molot (1900), 6,000 tons, 11 knots. Smolni, 3,200 tons, 10 knots. Kommuna (1913), 2,400 tons, 10 knots.

Sovjetskaja Rossija, 5,200 tons, 12 knots. Oka (1914), 1,982 tons, 10 knots.

TRAINING SHIPS.—Sver, 10,000 tons, 15 knots. Kursant, Ucheba, Praktika.

GUARDSHIPS.—Razvedchik (1904), 100 tons, 16 knots, 2 3-pr. Dzerzhinski, Kirov (1934), 800 tons, 20 knots, 2 4-in., 4 1.5-in. A.A.

MOTOR TORPEDO BOATS.—About 200, 10-26 tons.

New construction programme is not known.

SPAIN.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Cost.	Armour.		Torpedo Tubes.	Speed. knots.	Fuel.		Complement.
										Side Deck.	Gun Position.			Coal.	Oil.	
l. cr.	Canarias.	10,000	636	64	17-4	90,000 P.T.(G.) Y.	Ferrol	1931 1934	£ ..	4 3	1	12 21-in. (T.)	33-0	—	2750	765
"	Miguel de Cervantes							1928 1930		3	..	12 21-in. (T.)	33-0	—	—	560
"	Almirante Cervera	7475	579½	54	16½	80,000 P.T.(G.) Y.	Ferrol	1925 1928	..	1	..	12 21-in. (T.)	33-0	1680	—	404
"	Libertad (ex-Prince Alfonso)							1925 1927	..	—	3	4 21-in. (T.)	25-5	1200 230	—	320
"	Navarra, ex-Republica (ex-Reina Victoria Eugenia)	4857	462	50	15½	25,500 P.T.	Ferrol	1920 1923	..	3-1½	3	4 21-in. (T.)	25-5	800 500	—	220
"	Mendez Nuñez	4509	462	46	14½	45,000 (G.)	Ferrol	1922 1924	..	3	..	12 21-in. (T.)	29	324	—	127
g.b.	Eduardo Dato							1923 1925	..	..	..	—	15	—	—	—
"	Jose Canalejas	1314 (nor-mal)	251½	33½	11½	1700 tur.	Ferrol	1922 1924	..	..	..	—	15	—	—	—
"	Antonio Canovas del Castillo							1922 1923	..	..	..	—	15	—	—	—
"	Lauria	800 (nor-mal)	213½	30	9½	1100 Y	Cartagena	1912 1912	..	..	..	—	14-0	14½	—	—
"	Laya.							1911 1911	..	..	..	—	14-0	—	—	—

SAILING TRAINING SHIPS.—Sebastian Elcano (1928), 3500 tons, 800 H.P. (Diesel), 9-5 knots, 4 2-4-in.; Galatea (ex-Clarastella) (1903), 2710 tons, 8½ knots, 2 2-24-in. SUBMARINE SALVAGE VESSEL.—Kanguro (1917), 2707 tons, 10 knots, four 2-pr. OILER.—Pluton. SURVEY VESSELS.—Tofno, Malaspina, 1200 tons, 12 knots. ARMED TRAWLERS.—Alcazar, Larache and Tetuan, 400 tons, 10 knots, 1 3-in. (also 2 3-pr. in Alcazar); Arcila, 510 tons, 10½ knots, 2 3-in.; Uad Martin, Uad Lucas, Uad Muluva, 420 tons, 10 knots, 1 3-in.; Uad Quert, Xaven, 650 tons, 10½ knots, 1 3-in. FISHERY PROTECTION VESSELS.—8 in number, 150 tons, 11 knots, 1 6-pr. MINELAYERS.—Jupiter, Marte, Neptuno, Vulcano, 2100 tons, 18½ knots, 4 4-7-in. A.A., 4 4-7-in. A.A., 4 m.g., 264 mines, 2 depth charge release gears; Eolo, Triton, 1500 tons, 18-5 knots, 4 4-in. guns (building). TRANSPORTS.—Almirante Lobo, 2505 tons, 12 knots, 2 1-6-in.; Contramaestre Casado, 7275 tons, 10½ knots, 4 1-6-in. TUGS.—Cartagenero, Ferroland, Gaditano, 300 tons, 10 knots, 1 6-pr.; Galicia, 350 tons, 10 knots, 1 3-in.; Ciclope, 800 tons, 12 knots, 1 3-in. Three coastguard patrol vessels, 250 tons, ordered and three fishery protection vessels projected. The battleship Jaime I., 14,224 tons, sunk 17/6/37, refloated and all guns removed, reported unfit for sea service.

SWEDEN.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.		Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position.	Guns.	Torpede Tubes.				
c.d.s.	Two in number	tons.	ft.	ft.	ft.				Proj'd	..	£	in.	in.	in.	in.	in.	in.	4 10-in., 6 4.7-in., 8 1.5-in. A.A.	..	knots	Coal.	Oil.	..
"	Aran . . .	8600 436	64	10½	49½	7000	Y. t	Gothenburg	1901	1902	..	7	1½	..	..	7½	5	2 8.3-in., 6 5.9-in., 10 6-pr., 1 1-pr.	2	17.2	300	300	287
"	Drottning-Victoria *	7100 396.7	61	21½	22,000	(G.)	Y. t	Gothenburg	1917	1921	666,000	8-6	1½	4	..	8	5	4 11-in., 8 5.9-in., 4 3-in., 2 6-pr., 6 m.	18-in.	23.0	690	98	450
l. cr.	Fylgia . . .	4200 378	48	620	612,444	(G.)	Y. t	Stockholm	1905	1907	385,700	4	2	..	..	5	5	8 5.9-in., 10 6-pr., 2 1-pr.	2	22.7	900	—	328
Hangar Cruiser	Gotland . . .	4700 442	50	614	733,000	(G.)		Gothenburg	1933	1934	910,000 (estimated)	..	..	..	..	..	..	6 6-in., 4 3-in. A.A., 4 m., 100 mines, 8 seaplanes, 1 catapult	sub.	27.0	oil	—	453
c.d.s.	Gustav V. *	7100 396.7	61	21½	22,000	(G.)	Y.	Malmö . .	1918	1922	666,000	8-6	1½	4	..	8	5	4 11-in. 8 5.9-in., 4 3-in. A.A., 2 6-pr., 6 m.	18-in.	23.0	690	98	450
"	Manligheten . .	3361 287	49½	17.4	7400	Y.		Malmö . .	1903	1904	..	7	1½	..	..	7½	5	2 8.3-in., 6 5.9-in., 8 6-pr., 1 1-pr.	sub.	17.0	300	—	300
"	Oscar II . . .	4250 313.6	50.5	18	9000	Y.		Gothenburg	1905	1907	..	6	2	6	6	7½	5	2 8.3-in., 8 5.9-in., 8 6-pr., 1 1-pr.	18-in.	18.0	500	—	330
"	Sverige * . . .	6899 392.7	61	21½	20,000	tur. Y.		Gothenburg	1915	1917	666,000	8-6	1½	4	..	8	5	4 11-in., 8 5.9-in., 4 3-in., 2 6-pr., 6 m.	18-in.	22.5	690	98	450
"	Tapperheten . .	3361 287	49½	17.7	6000	Y.		Malmö . .	1901	1903	..	7	1½	..	..	7½	5	2 8.3-in., 6 5.9-in., 10 6-pr., 1 1-pr.	sub.	16.5	300	—	287
"	Wasa . . .	3361 287	49½	17	6500	Y.		Stockholm	1901	1902	..	7	1½	..	..	7½	5	2 8.3-in., 6 5.9-in., 10 6-pr., 1 1-pr.	21-in.	17.2	300	—	287

* Reconstructed and modernised (1929-33).

MINELAYER.—Fleming, 1570 tons, 44.7-in., 20 knots, 100 mines.

AIRCRAFT DEPOT SHIP.—Dristigheten (1901), 3218 tons, 6 knots, 4 3-in., 3 aircraft. DEPOT SHIPS FOR SUBMARINES.—Svea (1886), 2795 tons, 2 1.5 A.A., 1 building, 2000 tons, 20 knots, 2 4.7-in. guns.

SAILING TRAINING SHIPS.—Af Chapman, Najaden, Jarramas and Falken (1877-1900).

VEDETTE BOATS (used for minelaying and minesweeping).—Kaparen, Jagaren, Snapphanen, Vaktaren, 290 tons, 24 knots, 2 3-in., 2 1-in. A.A.

TENDERS.—Sokaren, Sveparen, Sprangaren, 160 tons, 10 knots 1 6-pr.; Nos. 27, 28, 30, 33-36, 90 tons, 23 knots, 2 1.5-in., 1 15-in. T.T.; No. 19, 55 tons, 10 knots, 1 1.5-in.

MOTOR TORPEDO BOATS.—Nos. 1 and 2, 63 feet, 24 tons, 2000 H.P., 40 knots; Nos. 3 and 4, 55 feet, 11 tons, 900 H.P., 41 knots.

MINESWEEPERS.—Starkodder, Styrbjörn, 350 tons, 15 knots, 2 1.5-in.; M. 1, 2, 60 tons, 16½ knots, 2 m.g.; Arholma, Landsort, 370 tons, 17½ knots, 2 3-in. 1 m.g.; Nos. 1 and 2, 60 tons, 17 knots, 1 m.g.

ICEBREAKERS.—Atle, 1720 tons, 16 knots; Ymer, 3450 tons, 18 knots.

UNITED STATES.—Battleships

Class.	NAME	Standard Displacement.	Length. (Extreme).	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Cost. \$	Armour.					Armament.		Speed.	Fuel. Coal Oil.	Complement.
										Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position. Second-ary.	Guns.				Torpedo Tubes.
b.	Iowa	45,000	ft.	ft.	ft.	..	Philadelphia (Navy Yard)	Blg.	£	in.	in.	in.	in.	in.	9 16-in. guns	..	knots.	tons.	..
b.	New Jersey		..	..	..	..	New York (Navy Yard)	..	..	..	..	..	..	..	..	..	..	..	..
* b.	Washington		..	..	..	..	Newport	..	..	..	..	..	..	..	..	..	..	..	..
† b.	North Carolina		..	..	..	..	Bethlehem (S.B. Co.)	..	..	..	..	..	..	..	..	9 16-in. guns, 20 5-in., 16 smaller, 3 aircraft, 2 catapults	..	about 28 knots	..
b.	Indiana	35,000	750	108	28	70,000	Norfolk (Navy Yard)	..	..	..	..	..	..	..	..	..	..	..	..
b.	Massachusetts	32,600	608	106½	27½	33,376 B. & W. P. tur.	New York (Navy Yard)	1915	1,485,000	14-8 E.S.	3	..	..	18 E.S.	..	12 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 4 3-pr., 2 1-pr., 2 M., 2 L., 2 catapults 3 floatplanes	—	21·0	— 1350 2922
b.	Alabama		..	..	..	..	New York (S.B. Co.)	..	..	..	..	..	..	..	..	..	..	..	..
b.	South Dakota		..	..	..	..	New York (S.B. Co.)	..	..	..	..	..	..	..	..	..	..	..	..
b.	Arizona †	26,100	562	106	26	30,000 P. tur.	New York (S.B. Co.)	1911	964,000	11-5 E.S.	3	..	8-6 E.S.	11 E.S.	6½	12 12-in. (50 cal.), 16 5-in. (51 cal.), 8 5-in. (50 cal.) A.A., 4 3-pr., 2 1-pr., 2 M., 1 catapult, 3 floatplanes	—	20·5	— 1380 5100
b.	Arkansas *	32,600	624	97½	30½	26,800 tur. electric drive	Mare Island (Navy Yard)	1919	2,620,000	14-8 E.S.	3	..	..	18 E.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 4 6-pr., 2 M., 2 1-pr., 2 catapults, 3 floatplanes	2 21 (sub.)	21	— 1412 4656
b.	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

b. Colorado.	32,500 624	97½	30½	27,300 B. & W. tur. electric drive	New York (S.B. Co.)	1921 1923 1,383,000 19½-12 K.S.	..	..	..	18 K.S.	..	8 16-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 4 6-pr., 2 1-pr., 2 M., 2 catapulta, 3 floatplanes	2 21-in. (sub.)	— 4570	1407
b. Idaho †	33,400 624	106½	29½	40,000 B. & W. P.T.	New York (S.B. Co.)	1917 1919 1,485,000	14 K.S.	3	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 4 8-pr., 2 1-pr., 2 M., 2 L., 2 catapulta, 3 floatplanes	2 21½ (sub.)	— 3271	1374
b. Maryland	31,500 624	97½	29½	27,300 B. & W. tur. (G.) and electric drive	Newport News	1920 1921 1,383,000 19½-12 K.S.	..	..	..	18 K.S.	..	8 16-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 4 6-pr., 2 1-pr., 2 M., 2 catapulta, 3 floatplanes	2 21 (sub.)	— 4570	1410
b. Mississippi †	33,000 624	106½	29½	40,000 B. & W. C.T. (G.)	Newport News	1917 1919 1,485,000	14 K.S.	3	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 4 6-pr., 2 1-pr., 2 M., 2 catapulta, 3 floatplanes	2 21 (sub.)	— 3271	1374

* See note * on p. 267.

† Modernized, 1934. (See ‡ p. 267.)

‡ The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates.

† See note † on p. 267.

UNITED STATES.— Battleships—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draft.	Horse Power.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour					Armament.		Speed.	Fuel.		Complement.	
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Guns.	Heavy.		Second-ary.	Torpedo Tubes.		Guns.	knots.	tons.	Coal.	Oil.
b.	Nevada §.	29,000	583	108	27½	25,000	Y. P. tur.	Quincy, Mass. (Fore River)	1914	1916	1,211,342	13½-8 K.S.	14-3	..	13½ K.S.	18-16 K.S.	..	10 14-in. (45 cal.), 8 5-in. (25 cal) A.A., 4 6-pr., 2 1-pr., 2 M., 2 L., 2 catapults, 3 floatplanes	—	20.5	—	2000	1320
b.	New Mexico †	33,400	624	106½	29½	40,000	B. & W. Electric drive	New York (Navy Yard)	1917	1918	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 4 6-pr., 2 1-pr., 2 M., 2 catapults, 3 floatplanes	2 21.5 (sub.) 21-in.	21.5	—	3271	1414
b.	New York *	27,000	573	106	26	28,100	B. & W. recip.	New York (Navy Yard)	1912	1914	1,315,114	12-4 K.S.	3	9 K.S.	10 K.S.	14-8 K.S.	6 K.S.	10 14-in. (45 cal.), 16 5-in. (51 cal.), 8 3-in. (50 cal) A.A., 4 3-pr., 2 1-pr., 2 M., 1 catapult, 3 floatplanes	—	21 0	—	3200	1450
b.	Oklahoma §	29,000	583	108	28½	25,300	B. & W. recip.	New York (S.B. Co.)	1914	1916	2,200,000	13½-8 K.S.	1½-3	..	13½ K.S.	18-16 K.S.	..	10 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal) A.A., 4 3-pr., 2 1-pr., 2 M., 2 catapults, 3 floatplanes	—	20.5	—	2000	1320
b.	Pennsylvania†	33,100	608	106½	28	40,000	B. & W. Cur. tur.	Newport News	1915	1916	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal) A.A., 4 3-pr., 2 1-pr., 2 M., 2 catapults, 3 floatplanes	—	21.0	—	2300	1380
b.	Tennessee .	32,300	624	97½	30½	26,800	B. & W. Tur electric drive.	New York (Navy yard)	1919	1920	2,620,000	14-8 K.S.	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal) A.A., 4 6-pr., 2 1-pr., 2 M., 2 catapults, 3 floatplanes	2 21.0 (sub.) 21-in.	21.0	—	4656	1412

b. Texas*	27,000	573	106	26	28,100 recip.	Newport News	1912	1914	1,166,000	12-4 K.S.	3	9 K.S.	10 14-8 K.S.	6 10 14-in. (45 cal.), 8 9-in. (50 cal.) A.A., 4 3-pr., 2 1-pr., 2 m., 1 catapult, 3 floatplanes	51 — 21-0 — 1450	— 5200
b. West Virginia	31,800	624	97½	30	27,300 tur. electric drive.	Newport News	1921	1923	1,383,000	13½-1 K.S.	..	..	18 K.S.	8 16-in. (45 cal.), 8 5-in. (25 cal.) A.A., 4 (sub.) 6-pr., 2 1-pr., 2 m., 2 catapults, 21-in. 3 floatplanes	2 21-0 — 1407	— 4570

Battleship Utah was converted to a mobile target ship in 1931 in accordance with the London Naval Treaty, and the battleship Wyoming was converted to a training ship (speed 18 knots) in 1931 in accordance with London Naval Treaty.

* Modernised in 1927. Modernisation included fitting of bulge protection, protection of decks against aerial attack, conversion to oil burning, installation of 3-in. A.A. battery, and addition of catapults. Cost about £600,000 each ship. Displacement increased about 3000 tons.

† Modernised in 1931. Modernisation included fitting bulges, reboiling, increasing elevation of turret guns, replacing former anti-aircraft batteries by 5-inch A.A. guns, new masts and new fire control.

‡ Taken in hand for modernisation 1931. New Mexico and Mississippi completed 1933. Idaho completed 1934. Modernisation includes fitting, increased deck protection increasing elevation of turret guns, installation of eight 5-in. A.A. guns, reboiling, fitting of new turbines (the electric drive in New Mexico has been replaced by turbine machinery), alterations to masts and bridges, and fitting of bulges.

§ Modernisation in 1929. Alterations include fitting of bulges, deck protection, tripod masts, increasing elevation of turret guns, fitting a new 5-in. anti-aircraft battery. The modernisation of California, West Virginia, Colorado, Maryland, and Tennessee is projected.

UNITED STATES.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.	Speed.	Fuel.	Complement.
											Deck.	Gun Position.				
A.C.	Wasp	14,700 tons.	688 ft. (on w.l.)	80	20	(G.)	Bethlehem S. B. Co.	Bldg. 1936	..	£ about 4,000,000	in. ..	in. ..	8 5-in., 77 aircraft	..	tons. ..	..
A.C.	Hornet	19,800	760	83	21½	(G.)	Newport News	Bldg. 1936	1938	..	..	..	8 5-in. A.A. guns, 76 aircraft	..	..	..
A.C.	Yorktown	19,800	760	83	21½	(G.)	Newport News	Bldg. 1936	1938	..	..	..	8 5-in. A.A. guns, 76 aircraft	..	..	..
A.C.	Enterprise	14,500	769	80	19½	(G.)	Newport News	Bldg. 1933	1934	about * 4,000,000	..	..	8 5-in. A.A., 50 m.g., 76 aircraft	..	Oil 1434	..
A.C.	Ranger	14,500	769	80	19½	(G.)	Bethlehem S. B. Co.	Bldg. 1925	1927	9,000,000	..	..	8 5-in. A.A., 50 m.g., 76 aircraft	..	7100	1670
A.C.	Lexington	33,000	880	10½	31½	tur. electric	S. B. Co.	Bldg. 1925	1927	9,000,000	..	..	8 5-in. (55 cal.), 12 5-in. (25-cal.) A.A. 12 m.g.; 4 6-pr. Operates about 80 landplanes. 1 catapult	..	7100	ez Air
A.C.	Saratoga	33,000	888	105½	31	tur. electric	(Fore River) N.Y. Shipbuilding Co.	Bldg. 1925	1927	9,000,000	3	..	4 5-in. (51 cal.), operates 7 land-planes	..	—	411
A.C.	Langley †	11,500	542	63½	19	tur. electric	Mare Island Navy Yard	Bldg. 1912	1922	..	3	..	4 5-in. (51 cal.), operates 7 land-planes	15	2000	..

For particulars of Aircraft Tenders and Repair Ships, see page 156.

* The estimated cost has been increased from 19 million dollars to 21 million dollars to allow for the conversion of the vessel from a "flush-deck" type of carrier to an "island" type of carrier during construction.

† Formerly Collier Jupiter, converted 1937 into aircraft tender.

UNITED STATES.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.	Armament.	Speed.	Fuel.	Complement.
		tons.	ft.	ft.	ft.	Type of Machinery and Boilers.				£	Belt. Deck.	Guns.	Torpedo Tubes.	Coal. Oil.	
Phoenix Class	Phoenix	10,000 estimated	600 (on w. l.)	61	19	100,000 (G.)	N. Y. S. Co., Camden	1938		2,395,000	in.			Oil	.
	Boise						Newport News	1936		2,330,000	5 3				
	Honolulu						N. Y.	1937		..		15 6-in., 8 5-in., 4 seaplanes, 2 catapults	..		
	St. Louis						Newport News	1938	est.						
	Helena						N. Y. Navy Yard	1938	1939						
Wichita Class	Atlanta	6,000	530 (on w. l.)	53 1/2	16 1/2	..	Federal, S. B. Kearney	Bldg.	..	..	..	16 5-in. guns	..	..	.
	San Juan						Bethlehem								
	Juneau						S. B. Co								
	San Diego														
	Cleveland														
Brooklyn Class	Colombia	8,000	600 (on w. l.)	61 1/2	19 1/2	100,000 (G.)		Proj'd.	..	..	..	9 8-in., 8 5-in. A.A., 2 3-pr., 10 smaller, 2 catapults, 4 aircraft	None	Oil	.
	7 others						Philadelphia Navy Yard								
	Wichita														
	Savannah						N. Y. S. Co., Camden	1937		2,410,000	..	15 6-in., 8 5-in. A.A., 4 seaplanes, 2 catapults	None		
	Nashville						N. Y. S. Co., Camden	1937	1938	estimated	..				
Quincy Class	Brooklyn	9,400	588	61 1/2	19 1/2	107,000 P.T. (G.)	New York Navy Yard	1937	1938	estimated	..			Oil	620
	Philadelphia						Philadelphia Navy Yard	1937	1938	estimated	..				
	Vincennes						Bethlehem	1936	1937	estimated	..				
	Quincy						S. B. Corp., Quincy	1935	1936	estimated	..				

UNITED STATES.—Cruisers—continued.

Class.	NAME.	Displacement (batt. me.)	Length.	Beam.	Draft.	Horse-Power.	Type of Machinery	Where built.	Date of Launch	Date of Completion.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt.	Gun Post.	Guns.	Torpedo Tubes.			
Omaha Class	Trenton	7050	555½	55½	13½	90,000	P.T. (G)	Philadelphia (Cramp)	1923	1924	1'	in.	12 6-in. (53 cal.) (Marble- head, 11 6-in., 4 3-in. (50 cal.) A.A.; 2 3-pr., 2 cata- pults, 2 floatplanes, 30 mines	6 21-in. (T.)	33.7	— 1800	450
	Marblehead								1923	1924	3	..					
	Memphis								1924	1925	1½	..					
	Milwaukee								1921	1923	1½	..					
Pensacola Class	Omaha	7050	555½	55½	13½	90,000	P.T. (G.) (Kaleigh) C.T. (G.)	Wash. Bethlehem S.B. Co., Quincy Philadelphia (Cramp)	1920	1923	3	..	10 6-in. (53 cal.) (Omaha, 12 6-in., 4 3-in. (50 cal.) A.A.; 2 3-pr., 2 catapults, 2 floatplanes, 30 mines	6 21-in. (T.)	33.7	— 1800	450
	Raleigh								1923	1924	1½	..					
	Richmond								1921	1923	1½	..					
	Salt Lake City								1929	1929	3	..					
Pensacola Class	Pensacola.	9100	585½	65½	16	107,000	P.T. (G.)	New York S.B. Co. Navy Yard, New York	1929	1930	1½	..	10 8-in. (55 cal.), 4 5-in. (25 cal.) A.A., 2 3-pr., 2 cata- pults, 4 planes	6 21-in. (T.)	32.7	— 3000	603
									1929	1930	1½	..					

GUNBOATS.—Tulsa (1923), and Asheville (1920), 1270 tons, 12 knots, 3 4-in., 2 3-pr., 3 1-pr.; Sacramento (1914), 1140 tons, 12½ knots, 3 4-in., 2 3-pr., 2 1-pr.; and 5 others, used for training purposes; Charleston, and Erie (1936), 2000 tons, 20 knots, 4 6-in., 4 m.g., 1 seaplane.

RIVER GUNBOATS.—Guam (1927), Tutuila (1928), 370 tons, 14 knots, 2 3-in., 10 m.; Monocacy (1914), 180 tons, 13½ knots, 2 3-in., 7 m.; Luzon, Mindanao (1928), 560 tons, 16 knots, 2 3-in., 10 m.; Oahu (1928), 450 tons, 15 knots, 2 3-in., 10 m.

MINELAYERS.—Aroostook and Ozgala (1918), 4200 tons, 20 knots, 1 5-in., 2 3-in. A.A., 350 mines; 8 light mine-layers, ex-T.B.D.'s, 1160–1190 tons, 35 knots, 4 4-in., 1 3-in. A.A., 80 mines. Terror, 6000 tons (building).

MINESWEEPERS.—26 in number, "Bird" class (1918, 1919), 840 tons, 1400 h.p., 14 knots, 2 3-in. A.A. guns authorised but not carried. 6 more are equipped as submarine salvage vessels (Chevink, Falcon, Mallard, Ortolan, Pigron and Widgcon, built 1914–18, 1210–1270 tons, 14 knots). Raven, Osprey, 600 tons (building).

AIRCRAFT TENDERS.—Wright (1921), 8675 tons, 15 knots, 2 5-in., 2 3-in. A.A.; Avocet, Gannet, Heron, Lapwing, Pelican, Sandpiper, Swan, Teal, Thrush, Owl (1918–1919), 840 tons, 14 knots, 2 3-in. A.A.; Curtiss, Albemarle, 8300 tons (building); Barnegat, Biscayne (building); 6 in number, 1000 tons, 13½ knots, 2 3-in.; 10 in number, 1500 tons, 16½ knots, 1 5-in., 1 3-in.; 5 in number, 1800 tons, 15 knots, 2 5-in., 1 3-in.; 9 others, 800–1200 tons, 12 knots, 2 3-in.

COAST GUARD CRUISING CUTTERS.—7 in number, 2000 tons, 2 5-in., 1 3-in.; 9 others, 800–1200 tons, 12 knots, 2 3-in.

COAST GUARD PATROL BOATS.—17 in number, 311 tons, 16 knots, 1 3-in., 2 6-pr.; 36 in number, 200 tons, 10 knots, 1 3-in.; 15 in number, 45 tons, 22 knots; 58 in number, 37 tons, 13½ knots, 1 1-pr.

RADIO-CONTROLLED TARGET SHIPS.—Boggs, Lamberton (ex-Destroyers); Utah (ex-Battleship).
Others.—6 in number, 14 knots, 4 5-in.; 5 in number, 10–11 knots, 2 5-in.; 6 others; 1 building, 16½ knots, 8000 tons.

AMMUNITION SHIPS.—Pyro, Nitro, 10,000 tons, 13 knots, 4 5-in., 2 3-in.
DESTROYER TENDERS.—Dobbin (8325 tons); Whitney (8325 tons); and Melville (5250 tons), 16 knots, 8 5-in., 4 3-in.; Altair, Denebola and Rigel, 6250 tons, 10½ knots, 4 5-in., 4 3-in. A.A.; Black Hawk, 5600 tons, 13 knots, 4 5-in.; Bridgeport, 7125 tons, 12½ knots, 8 5-in., Dixie, Prairie, 9000 tons (building).

SUBMARINE TENDERS.—Holland (1926), 11,570 tons, 16 knots, 8 5-in., 4 3-in. A.A., 26-pr.; Bushnell (1915), 2900 tons, 14 knots, 4 5-in.; Canopus (1919), 6000 tons, 13 knots, 2 5-in., 4 3-in. A.A.; Camden (1900), 7596 tons, 12 knots, 4 4-in., 2 3-pr.; Beaver (1910), 5320 tons, 16½ knots, 4 5-in., 2 1-pr.; Argonne (1921), 8400 tons, 15½ knots, 2 6-pr. Fulton (building), 9000 tons.

REPAIR SHIPS.—Medusa (1924), 8125 tons, 16 knots, 4 5-in., 2 3-in. A.A., 2 6-pr.; Vestal, Prometheus (1909), 6625 tons, 16 knots, 4 5-in., 1 3-in.; Vulcan, 9500 tons (building).

TRAINING SHIP.—Wyoming (1912), 26,000 tons, demilitarised.

4 Store ships, 5 Cargo ships, 2 Transports, 1 Hospital ship, 11 Patrol vessels (Eagle class, 430 tons, 18 knots, 2 4-in., 1 3-in. A.A.), Craneship, Kearsage (capacity 250 tons), 2 survey vessels, and other auxiliaries.

SHIPS OF THE LESSER NAVIES.

Albania.—Four motor launches, Durres, Tirane, Vlone and Siranda (built in Italy, 1928), 40 tons, 17 knots, one 3-in. 2 m.

Bulgaria.—Patrol vessels: Derzki, Khrabri, Letoutschy, Shumni, Smyeli, Strogi (1907–8), 100 tons, 26 knots, 3 3-pr. Motor boats: Nos. 1, 2, 77 tons, 17 knots, 2 6-pr.; Capitan Minkoff, Conductor Dokizanoff, Minior, Vzrif. Two Minesweepers.

China.—Cruisers: *Ping Hai (Shanghai, 1932), 2,500 tons (360 ft. × 39 ft × 12 ft.), 10,500 H.P., 24 knots, six 5·5-in., six 3·1-in. and eight machine guns, four 21-in. torpedo tubes in pairs. Carry two seaplanes; Chao Ho and Ying Jui, built by Vickers Armstrongs 1912, 2,500 tons, 6,000 H.P., 20 knots, two 6-in., four 4-in., two 3-in., six 3-pr., two 2-pr. A.A. and two 1-pr., two single 18-in. torpedo tubes; Hai Yung, Hai Chen and Hai Chou, built at Stettin 1898, 3,000 tons, 7,500 H.P., 19 knots, three 6-in., eight 4-in., four 3-prs. and smaller guns, mount one submerged 14-in. bow torpedo tube; Hai Chi (Elswick, 1898), 4,300 tons, 17,000 H.P., 24 knots, two 8-in., ten 4·7-in., twelve 3-prs., six machine guns and four small guns, five 18-in. torpedo tubes. Tung Chi (Foochow, 1896), now used as a training cruiser, 1,900 tons, 1,600 H.P., 10½ knots, two 6-in., five 4-in. and eleven smaller guns. Sloops: *Yat Sen (1931), 1,650 tons, 4,000 H.P., 20 knots, one 6-in., one 5·5-in., four 3-in. A.A., two 3-pr., four machine guns; Hsien Ning (Shanghai, 1928), 418 tons, 2,500 H.P., 16 knots, one 4·7-in., two 3-in., three 6-prs., five machine guns; Yung Chien, Yung Chi (Shanghai, 1915), 870 tons, 1,350 H.P., 13 knots, one 4-in., one 3-in., four 3-prs. and three smaller guns. Gunboats: Yung Sui (Shanghai, 1929), 600 tons, 4,000 H.P., 18 knots, one 6-in., one 4·7-in., three 3-in. A.A., and eight smaller guns; Min Sen, Min Chuan (Shanghai, 1931), 465 tons, 16 knots, one 4·7-in., one 4-in., one 3-in. A.A., and two 6-prs. Chang Ning, Cheng Ning, Wu Ning, Sui Ning, Wei Ning, Su Ning, Kiang Ning, Hai Ning (1933–34), 300 tons, 11 knots, two 2½-in, 3 m. Old Gunboats: Chung Shan and Yung Hsiang (Kobe, 1913), 830 tons, 13½ knots, one 4-in., one 3-in.; Chu Yu, Chu Yiu, Chu Chien, Chu Kuan, Chu Tung and Chu Tai (Kobe, 1907), 700 tons, 11 knots, two 4·7-in., two 3-in. and some smaller guns. Destroyers: Tung An, Kien Kang (1912), 390 tons, 32 knots, two 3-in., four 1·85-in., two 18-in. torpedo tubes. Torpedo boats: Hu Peng, Hu Ying, Hu Chun (1908), 96 tons, 23 knots, one 1·85-in., three 14-in. torpedo tubes. Ten patrol boats of 300 tons armed with 6 prs. Fourteen river gunboats. There are in addition a few gunboats and miscellaneous vessels belonging to the water police of Canton province.

* In Japanese hands.

Fifteen motor torpedo boats built by Thornycroft, 1936-8, two torpedoes, four machine guns, 45 knots. Two Italian M.T.B.'s. The new construction programme is reported to include two gunboats, ten motor torpedo boats, four destroyers and four submarines. China at present has no submarines.

NOTE.—Owing to the hostilities between China and Japan, the above list is uncertain, as a number of vessels have been sunk or passed into Japanese hands.

Colombia.—Gunboats: Presidente Mosquera, 200 tons; Cartagena, Santa Marta, Barranquilla (Yarrow's, 1930), 140 tons, length 137½ ft., speed 13½ knots, two 3-in. A.A. The following two destroyers were purchased from Portugal early in 1934, Caldas and Antioquia (1934), 1,282 tons, length 319 ft., beam 31 ft., speed 36 knots, four 4.7-in. guns, three 1½-in. A.A. and eight 21-in. torpedo tubes; built by Yarrow's in Portugal. River gunboats: Mariscal Sucre, 500 tons, Cordobo, 450 tons, four 3-in. Patrol vessels: Junin, Cairabosso and Pehincha, 200 tons, 13 knots. Transports: General Mosquera, 3,500 tons, two 3.5-in.; Bogata, 500 tons, 16 knots, one 3.5-in., two 3-in., 2 M.

Cuba.—Light cruiser, Cuba, 2,055 tons, 6,000 H.P., 18 knots, two 4-in., six 3-in., four 6-pr., four 3-pr., 2 M. Training ship: Patria (1911), 1,200 tons, 16 knots, two 3-in., four 6-pr., four 3-pr. Gunboats: Habana, Pinar del Rio, Villas, Matanzas (1912), 80 tons, 12 knots, one 1-pr.; 24 de Febrero, 10 de Octubre (1911), 218 tons, 12 knots, three 3-pr.; Baire (1906), 500 tons, 14 knots, four 3-in., two 3-pr., 1 M.; Yara (1895), 450 tons, 12 knots, one 3-in., two 6-pr.; 20 de Mayo (1895), 200 tons, 12 knots, two 3-pr., two 1-pr.; Enrique Villuendas (1899), 178 tons, 16 knots, two 3-pr.; Captain Quevedo (1932), 137 tons, 12 knots, two 1-pr., one 3-in. A.A.

Czecho-Slovakia.—Patrol boats: President Masaryk (1932), 200 tons, 1,600 H.P., 16.8 knots, four 3-in. A.A.; four in number, 17 tons, 20 knots, two 3-in., and four in number, 7 tons, 16 knots, 2 M.

Ecuador.—Mine-laying patrol vessels Tarqui (50 tons), and gunboat Abdon Calderon (*ex* Cotopaxi) (1884), 700 tons. Training ship: President Alfaro, 850 tons gross, 16 knots.

Egypt.—Patrol vessels: El Amira Fawzia (1929), 2,640 tons, 14 knots, two 3-pr.; El Amir Farouq (1926), 1,441 tons, 17 knots, one 6-pr., 1 M.; Mabahiss (1930), 618 tons, 11 knots, used for surveying. Training ship: Abdel Monaym (1902), 610 tons, 13½ knots. Inspection vessel and store carrier: Naphtys (1905), 650 tons, 7½ knots. Coastal motor boats: Al Sarea (J. S. White, 1937), 13 tons, 36 knots, one 1.5-in.; 2 C.M.B.'s., 20 tons, 20 knots; Qamar, 23 tons, 11 knots; El Hoot, 24 tons, 7 knots. A number of M.T.B.'s, escort vessels, and minesweepers are projected.

Estonia.—Mine-layers Keri and Vaindlo (1914), 50 tons, 9 knots, one 3-pr., minesweepers Sourop and Ristna, 500 tons,

12 knots, one 3-in. gun, one 1-pr. ; Tahkona, 45 tons, 12 knots ; Ice-breakers: Suur Toll and Tasunia, 4,800 tons, 15 knots ; Peipus Lake gunboats Ahti, 144 tons, 10 knots, two 2-in. guns, and Tartu, 108 tons, 11 knots, two 1-pr. Torpedo boat Sulev (*ex-German A32*) (1917), 243 tons, 26 knots, two 3-in., two 18-in. torpedo tubes, 10 mines ; gunboat Laene, 400 tons, 12 knots, two 3-pr. ; river gunboat Mardus, 100 tons, 10 knots, two 3-in. guns, 2 m. Two submarines, Lembit and Kalev, built at Vickers' 1936, 620 tons surface displacement, 820 tons submerged, 1,200 H.P., $13\frac{1}{2}$ knots on surface, $8\frac{1}{2}$ knots submerged, one 40-mm. A.A. gun, four 21-in. torpedo tubes. One destroyer and three m.t.b.'s are projected.

Finland.—Patrol boats: Uusimaa (1919), and Hämeenmaa (1918), 400 tons, 15 knots, two 4-in. guns, one 1.5-in. A.A. ; Karjala (1918) (*ex-Filin*), and Turunmaa (1918) (*ex-Orlan*), 342 tons, 15 knots, two 3-in. guns ; 7 m.t.b.'s, 11–13 tons, 25–35 knots, two torpedo tubes ; seven ice-breakers, 4 4.7-in. guns, eight minesweepers and eleven motor launches. Two armoured gun-boats (4-in. belt), Väinämöinen and Ilmarinen, length 305 ft., 3,900 tons, 5,000 H.P. (Diesel-electric), 15 knots, four 10-in. guns, eight 4.1-in. guns, built at A/B Crichton-Vulkan, Abo (1932–3). Submarines Iku-Turso, Vetehinen and Vesihäisi (Abo, 1930), 490/700 tons, speed 14 knots surface, 9 knots submerged, one 3-in. gun, 20 mines, six 21-in. torpedo tubes ; Saukko (Helsingfors, 1930), 100/136 tons, two 18-in. torpedo tubes, nine mines ; Vesikko (1933), 250/300 tons, $13\frac{7}{8}$ knots, four 21-in. torpedo tubes, one machine gun. Sailing training-ship Suomen Joutsen (*ex-German Oldenburg*). Ice-breaker Sisu (1939), 1,980 tons, 15 knots, two 4-in. guns. Two minelayers, 1,300 tons, are projected. Submarine parent ship : Louhi, 640 tons, 11 knots, two 1.85-in., 150 mines. Four m.t.b.'s are projected.

Hayti.—Special service vessels, Nord Alexis (1891), 1,230 tons, 14 knots, two 4.7-in. ; Veretieres (1889), 270 tons, 9 knots ; 17 Decembre, 851 tons ; Pacifique, 488 tons, 14 knots.

Hungary.—Patrol vessels : Sopron, Debreczen, 138 tons, two 2.75-in., 4 m., 15 knots, complement 44 ; Kecskemet, Szeged and Győr, 131 tons, four 3-in., 4 m., 15 knots ; also twelve motor launches.

Iceland.—Three fishery protection vessels : Aegir, 500 tons, 14 knots, two 6-pr. ; Thor, 300 tons, 10 knots, one 2.4-in. ; Vifil, 150 tons, one 1.8-in.

Iraq.—Four in number motor patrol vessels, 100 ft. in length, 60 tons, 280 H.P., 12 knots, one 3.7-in. howitzer, 4 m.

Latvia.—Gunboat Virsaitis (*ex-German M68*), 480 tons, 16 knots, two 3-in., two 6-pr., one 3-in. A.A., one torpedo tube ; one ice-breaker, Krisjanis Valdemars, 2,250 tons, 14 knots ; two submarines (1927), Ronis and Spidola, 390/514 tons, $14\frac{1}{2}/9\frac{1}{4}$ knots, one 3-in. A.A., 2 m., six 18-in. torpedo tubes ; two minesweepers, Imanta Viesturs, 225 tons, 14 knots, one 3-in. A.A., 4 m., thirty

mines, completed in 1926; one submarine depot ship, *Varonis*, formerly an ice-breaker, 10 knots; Surveying vessel, *Hidrografs* (1918), 450 tons, 10 knots.

Lithuania.—Patrol vessel: *Prezidentas Smetone* (1917), 500 tons, two 3-in. guns, 16 knots.

Manchukuo.—Destroyer: *Hai Wei*, 755 tons, 31.5 knots, three 4.7-in., six 18-in. torpedo tubes. Gunboats: *Chingjen*, *Tingpjen* (1935), 290 tons, 13 knots, two 4.7-in., 3 m.; *Shun Tien*, *Yang Min* (1934), 270 tons, 12 knots, two 4.7, 3 m.; *Ta Tung*, *Li Min* (1933), 65 tons, 10½ knots, 3 m.; *Li Chi* (1903), 220 tons, 13 knots one 3-in., 4 m.; *Li Sui* (1903), 220 tons, 13 knots, two 2½-in., 2 m.; *Kiang Tung*, *Kuang Ning*, *Kiang Chin* (1900), 200 tons, 9 knots, one 3-in., 4 m.; *Ching Yun* building. Patrol boats: *Haifeng*, *Hailung* (1933), 200 tons, 14 knots, two 3.1 in., 2 m.; *Hai Kuang*, *Hai Sui*, *Hai Jung*, *Hai Hua* (1933), 42 tons, 12 knots, one 2.24-in., 2 m.; *Daichi Kaihen*, *Daini Kaihen* (1933), 42 tons, 15 knots, 2 m. Armed launches: *Chi Min* (1934), 20 tons, 10 knots, 2 m.; *En Min*, *Hui Min*, *Pu Min* (1933), 15 tons, 10 knots, 2 m.

Mexico.—Coast defence vessel *Anahuac* (1898), 3,162 tons, 15 knots, two 9.4-in., four 4.7-in., four 6-pr., 2 m., 2 l.; gunboats: *Bravo* 1,227 tons, 3,000 I.H.P., 12½ knots (*Leghorn* 1904), two 4-in., four 6-pr.; *G20-29* (1934-5), 130 tons, 3,000 H.P., 26 knots, two 25 m.m. A.A. and four 13 m.m. A.A. Armed transport: *Durango*, built in Spain, 1935, 1,600 tons, 20 knots, 3,000 miles endurance at 15 knots, two 4-in., two twin 1-in. pompoms, two four-barrelled 5-in. machine guns, built to carry 500 men and 80 horses. Three others, *Querataro*, *Potesi* and *Guanajato*, 1,300 tons, 20 knots, three 4-in. and twelve machine guns, to transport 230 men and 20 horses. Patrol vessels: *Mazatlán*, *Acapulco* and *Veracruz* (1920), 486 tons, 8 knots, one 6-pr. and two m.g. Transports: *Progreso* (1907), 1,590 tons, 13 knots, four 6-pr., five others. Oiler: *Mexico*, 2,559 tons gross.

Nicaragua.—One gunboat: *Momotombo*, two 3-in. guns.

Paraguay.—Gunboats: *Humayta* and *Paraguay* (1931), 636 tons, 17 knots, four 4.7-in., four 3-in. A.A. guns, 2 m., six mines; two older, *Capitan Cabral* and *Tacuari*, 120 tons, completed 1910, one 3-in., two 6-prs., 10 knots. One despatch vessel, with 3-in. gun.

Persia (Iran).—Gunboats: *Babr* and *Palang* (Italy, 1932), 950 tons, 205 ft. long, 1,900 H.P. (Diesel), 15 knots, two 4-in. and two 3-in. A.A. guns. Four motor patrol boats built in Italy (1932): *Semorg*, *Chahbaaz*, *Karkas* and *Chahrokh*, 330 tons, 900 H.P. (Diesel), 15 knots, two 3-in. guns, 2 m. Gunboats and patrol vessels are for customs work. Motor boats: *Azerbaijan*, *Gehlani*, *Mazenderan* (built in Italy, 1935), 28 tons, 68½ feet. Training ship: *Homav*, 700 tons; *Shahin*, 150 tons, 16 knots.

Peru.—Almirante Grau and Coronel Bolognesi, cruisers, 3,200 tons (Barrow, 1906), two 6-in., eight 3-in., eight maxim, two 18-in. submerged torpedo tubes, 24 knots, converted to oil-burning 1925, to be fitted as minelayers; also Lima (1880, refitted 1920) (parent ship for submarines), 1,790 tons, 10 knots, three 4-in. Gunboat: America, 200 tons, 14 knots, two 3-pr. Destroyer: Tieniente Rodriguez, 490 tons, 28 knots, six 9-pr. T.B.D.'s: Almirante Guise (*ex-Lennuk*) (1917), 1,400 tons, 35 knots, five 4-in. guns, one 2-pr., nine 18-in. r.t., eighty mines, and Almirante Villar (*ex-Vambola*) (1918), 1,260 tons, 35 knots, four 4-in. guns, two m., one 2-pr., nine 18-in. r.t., eighty mines. Submarines R1-4, built in U.S.A. (1926-9), and R5 and R6 authorised, 576/682 tons, 14½/10 knots, one 3-in., four torpedo tubes. One vedette boat, the Napo, 98 tons, built by Yarrow, 1921, three 1-8-in., 12 knots. Gunboats: Amazonas and Loreto (1934), 250 tons, 750 H.P., 15 knots, four 1-5-in., two 8-in., two m.g. Transport vessel: Rimac, 6,848 tons (gross), 12 knots. Oiler: Pariñas, 2,820 tons (gross), 10 knots.

Philippines.—Two M.T.B.'s, two building.

Poland.—Four *ex-German* torpedo boats (355 tons, 20 knots, two 3-in., 18-in. torpedoes) for police purposes. Gunboats: Komentant Pilsudski and General Haller (1920), 340 tons, 15 knots, two 3-in., 2 m. Training ship: Iskra. River monitors: Warszawa, Horodyszcze, Torun, Pinsk (1920), 110 tons, 9 knots, two 4-in., two 3-in. A.A.; Wilno, Krakow (1926), Niedosciagnona, Niezwyciezona (1934), 70 tons, 9 knots, one 3-9 in., two 3-in. A.A. Twenty motor boats. Two destroyers: Burza, Wicher (1931-2), 1,515 tons, 33,000 H.P., 33 knots, four 5-1-in., one 2-9-in. A.A., six 21-7-in. torpedo tubes. Three submarine minelayers: Rys, Zbik and Wilk (1931-2), 964/1,230 tons, 1,800/1,200 H.P., 14/9 knots; one 4-in., one 2-pr., six 21-7-in. torpedo tubes, 40 mines. Minesweepers: Jas Kolka, Mewa, Czajka, Rybitwa (1935), 183 tons, 1,040 H.P. (Diesel), 15 knots, one 3-in. gun, 4 m. Czapla, Zuraw, 200 tons, 17 knots, building. Minelayer: Gryf (1938), 2,200 tons, 6,000 H.P. (I.C.), 20 knots, six 4-7-in., four 1-5-in. A.A., two machine guns, 300 mines. Two destroyers: Grom and Blyskavica (1937), 2,000 tons, 39 knots, seven 4-7-in., two 1-57-in. A.A., two triple 21-in. torpedo tubes. Two submarine minelayers built in Holland: Sep, Orzel, 1,088/1,525 tons, 5,400 H.P., 20/9 knots, four 1-57-in. guns, twelve 21-in. torpedo tubes. Transport: Wilja, 8,400 tons, 10 knots. Submarine depot ship: Slawomir Czerwinski, 2,450 tons gross, 12 knots.

Portugal.—The minelayer Vulcano (150 tons) (Thornycroft, 1909), 12 knots. Two sloops, about 1,200 tons, sold out of the British Navy: Carvalho Araujo (*ex-Jonquil*) and Republica (*ex-Gladiolus*), 17 knots, two 4-in., two 3-in. A.A., two 3-pr. Destroyer: Tamega (1913-24), 670 tons, 11,000 H.P., 27 knots, one 4-in., two 3-in., two torpedo tubes. Gunboats: Zaire (1919), Diu and Lagos (1932), Faro (1928), 400 tons, 700 H.P., 13 knots, two 3-in., two 3-pr., and there are 10 older ones. Torpedo boats: Ave and Sada, 190 tons, 28 knots, one 9-pr., four 18-in. torpedo tubes.

1st class sloops : Alfonso de Albuquerque and Bartolomeu Diaz (Hawthorn Leslie, 1935), 1,760 tons, 21 knots, four 4·7-in., two 3-in. A.A., four pompoms, two torpedo tubes, one catapult, one aircraft and forty mines. 2nd class sloops : Goncalo Velho and Goncalves Zarco (Hawthorn Leslie, Newcastle, 1933), 1,045 tons, 2,000 H.P., 16½ knots, three 4·7-in., two 1·5-in. A.A. Pedro Nunes (1935) and João de Lisboa (*ex*-Infante Henrique) (1937), 1,080 tons, 17 knots, two 4·7-in. Destroyers : Vouga and Lima (Yarrow's, Scotstoun, 1933), Dao, Tejo and Douro (built by Yarrow's in Portugal, 1935), 1,282 tons, 33,000 H.P., 36 knots, four 4·7-in., three 1·5-in. A.A., two quadruple 21-in. torpedo tubes, twenty mines. Submarines : Delfin, Espardate and Golfinho (Vickers, 1934-5); surface condition, 800 tons, 2,300 H.P. and 16½ knots; submerged condition, 1,000 tons, 1,000 H.P. and 9½ knots; one 4-in. gun, 2 m., six 21-in. torpedo tubes. Two patrol vessels, 250 tons, 18 knots, and four projected. New construction includes three destroyers, three submarines, six gunboats, three M.T.B.'s, and one surveying ship.

Rumania.—River monitors : Bucovina (1916), 540 tons, 12 knots, two 4·7-in., two 4·7-in. howitzers, two 3-pr., two 11-pr. A.A.; Ardeal (1905), 440 tons, 10 knots, two 4·7-in., one 3-pr., one 3·5-in. A.A.; Basarabia (1915), 530 tons, 12 knots, two 4·7-in., two 3-pr., two 11-pr. A.A.; Lascar Catargiu, Ioan Bratianu, Milhail Kogalniceanu, Alexandru Lahovari (1907-8), 670 tons, 13 knots, three 4·7-in., two 3-pr., one 3-in. A.A., 2 m.

Flotilla leaders : Regele Ferdinand and Regina Maria (Naples, 1930, Thornycroft's design), 1,785 tons, 38 knots, length 334½ ft., five 4·7-in., three 2-pr. A.A., two twin 21-in. torpedo tubes, 50 mines. Marasti, Marasesti (*ex*-Italian Nibbio, Sparviero), 1917-18, 1,460 tons, 35 knots, five 4·7-in., four 3-in. A.A., 2 m., two twin 18-in. torpedo tubes, fifty mines.

Seven vedettes (built in 1908), 50 tons, 18 knots, one 3-pr. gun.

Gunboats : Stihî, Lepri Remus, Dumitrescu, Ghiculescu (1916-17, *ex*-French Magnonne, Friponne, Chiffonne, Impatiente), 350 tons, 15 knots, two 3·9-in., 2 m.

Submarines : Delfinul (Quarnaro, Fiume, 1932). Displacement, 640 tons surface, 900 tons submerged, speed 14 knots surface, 9·5 knots submerged, one 4·2-in. gun, six 21-in. torpedo tubes; S929 and S930 building.

There are also five armed motor boats, police craft (*ex*-Austrian T.B.'s), Naluca, Sborul and Zmeul, and seven armed launches.

A submarine depôt ship, Constanta, 1,821 tons, 13 knots, two 4-in. A.A. guns (Fiume, 1930).

Training ship, Mircea, 350 tons, 8·5 knots, two 1-pr. Sailing with auxiliary engines.

Minelayer : Admiral Murgescu, 812 tons, building. A number of other craft are projected.

Thai (Siam).—Gunboats : Mongkut Rajakumarn (1887), 700 tons, 11 knots, two 4·7-in., two 6-pr., three 3-pr.; Srma Monthon (1908), 225 tons, 14½ knots, two 6-pr.; Ratnakosindr (1925), 920

tons, two 6-in., four 8-in. H.A., 12 knots; Sugrib (1900), 580 tons, 11.5 knots, one 4.7-in., five 6-pr., 2 m.; Sukhodaya (Vickers, 1930), 1,080 tons, 13 knots, two 6-in., four 8-in. A.A.; Dhamburi, Sri Ayudhya (Japan, 1938), 2,000 tons, 15½ knots, four 8-in., four 3-in. guns. Destroyer: Phra Ruan (*ex*-British *Radiant*, 1917), 719 tons, 35 knots, three 4-in. Six 55-ft. Thornycroft m.t.b.'s, 13½ tons, two 18-in. torpedoes, two Lewis guns. Nine torpedo boats built in Italy (1936-37), 460 tons, 32 knots, three 3-in. guns, 4 m., six 18-in. torpedo tubes. Training ship: Chao Phra (1919), 840 tons, 16 knots. Submarines: Blai Jumbol, Sinsa Mudr, Machino, Virun, 325 tons, 14.5/8 knots, 1 m., five 21-in. torpedo tubes, built in Japan, 1938. Two minelayers: Bang Rachan and Nong Sarai (1936), Italian built, 368 tons, 13 knots, two 3-in. Three patrol vessels (1936), built in Japan, 110 tons, 18 knots, one 3-in., 4 m., two 18-in. torpedo tubes. Tug: Pi-Sua-Maar, 165 tons, 9½ knots. Transports: Vides Kichkar (1902), 850 tons; Amgthong (1918), 15 knots; Pagan Sichaun, 650 tons. Oiler: Sumui (1936), 1,854 tons, 12 knots. Three fishery protection vessels (1936), 50 tons, 9½ knots, one 1.5-in. Building programme includes two 4,200-ton cruisers, two sloops, four submarines, one minelayer, seven torpedo boats and two patrol boats.

Turkey.—The battle-cruiser Yavouz Sultan Selim (1912) (*ex*-Goeben), 22,734 tons, 27 knots; armament: ten 11-in., ten 5.9-in., eight 3.5-in., four 1.5-in. p.p., 2 m., 1 l., four submerged 19.7-in. torpedo tubes. Light cruisers: Hamidieh (Elswick, 1904), 3,830 tons, speed 22 knots; armament: two 5.9-in., six 3-in., eight 3-in. A.A., two 18-in. torpedo tubes, seventy mines; Medjidieh (Philadelphia, 1903), refitted 1927, 3,300 tons, speed 22 knots; armament: four 5.1-in., two 3-in. A.A., 4 m. Destroyers: Adatepe, Kocatepe (Ansaldo, Italy, 1932), 1,310 tons, 43 knots, four 4.7-in., three 2-pr. A.A. guns, six 21-in. tubes. Tinaztepe and Zafer (Cantiere Navale del Tirreno, Italy, 1932), 1,840 tons, 38 knots, four 4.7-in. guns, three 2-pr. A.A., six 21-in. torpedo tubes. Submarines: Ikindji-in-Uni and Birindjiin-Uni (Fijenoord, Rotterdam, 1928), 433/556 tons, 13½/9½ knots, one 3-in., 1 m., six 18-in. torpedo tubes; Dumlupinar (minelayer) (Monfalcone, 1932), 950 tons, 15 knots, 2,400 H.P. surface, 1,200 tons, 9½ knots, 1,400 H.P. submerged, one 4-in. A.A., four torpedo tubes, forty mines; Sakarya (Monfalcone, 1932), 610 tons, 15 knots, 1,500 H.P. surface, 940 tons, 9½ knots, 1,100 H.P. submerged, one 4-in., six 21-in. torpedo tubes; Gur (Cadiz, 1930), 750/960 tons, 20/9 knots, 2,800/1,000 H.P., one 4-in. gun, four 21-in. torpedo tubes; Baitray (Kiel, 1939), 1,028 tons, 19 knots, 4,800 H.P. surface, one 4-in. gun, six 21-in. torpedo tubes. Three motor launches (1931), 32 tons, 34 knots, one 3-in., two torpedoes, four motor launches, 11 knots, 2 m. Torpedo gunboats: Peikei-Shevket and Beru-i-Satwet (1906), 840 tons, 22 knots, two 4-in., four 6-pr., three 18-in. torpedo tubes. Minesweepers, three in number, 413 tons, three 3-in., two 3-pr., 14 knots. Minelayer: Yardim (1913), 360 tons, 15 knots, twenty-five mines. Depot ships: Erkin, 9,400 tons gross, 12½ knots; Torgbud Reis, 9,842 tons. Building programme includes two 8,000-ton cruisers. Destroyers: Sultan Hisar, Demir Hisar, Mauvenet, Gayret,

1,370 tons, 35·5 knots, four 4·7-in. guns, eight 21-in. torpedo tubes. Submarines : Salidray, Atilay, Yildiray, 920/1,200 tons, 20/9 knots, 4,800 H.P., one 4-in. gun, six 21-in. torpedo tubes ; Oruc Reis, Murap Reis, Ulucali Reis, Burak Reis, 624/856 tons, 1,200/780 H.P., 13·7/8·4 knots, one 4-in. gun, nine 21-in. torpedo tubes. Minelayers : Atak, Dilgitch, 500 tons, 13 knots ; Sivri Hisar, Yuzbashi Hakki, 350 tons, 15 knots.

Uruguay.—Torpedo-gunboat (training ship) Uruguay (1910), 1,150 tons, 23 knots, two 4·7-in., four 3-in., six 1-pr., two 18-in. torpedo tubes. Surveying ship Capitan Miranda (1930), 516 tons, 12 knots. Training ship : 18 de Julio, 680 tons, 12 knots. Three coastguard patrol boats : Paysandu, Salto, and Rio Negro, built in Italy, 1935, 150 tons, 1,150 H.P. (Diesel), 16 knots, two 3-in., two machine guns. Armed tugs : Vanguardia (1908), 95 tons, 12 knots, two 1·5-in. ; Corsario, 130 tons, 10 knots, two 1·5-in.

Venezuela.—Old gunboats : Mariscal Sucre, 1,125 tons, 13 knots, two 4-in., two 6-pr. ; General Salom (750 tons), one 3-in., four 6-pr., 12 knots ; Miranda (200 tons), Brion (150 tons). Armed tug José Felix Ribas, two 6-pr. Armed yacht Maracay. Minelayers : General Soublette, General Urdaneya. A number of other craft are projected.

Yugoslavia.—Submarines Hrabri and Nebojsca, completed at Armstrong's 1928, displacement 870 tons surface, 1,146 tons submerged, speed 15 knots surface, 10 knots submerged, mount two 4-in., six 21-in. torpedo tubes. Smeli and Osvetnik, completed at Nantes, 1929, displacement 570 tons surface, 797 tons submerged, speed 14·5 knots surface, 9·25 knots submerged, carry one 4-in., one 2-pr. and six 21-in. torpedo tubes. Old cruiser Dalmacija (*ex*-German Niobe), refitted 1926, 2,370 tons, six 3-in., is used as a gunnery and general training ship. There are four *ex*-Austrian river monitors, Vardar, Drava, Sava, Morava, 400–530 tons, mounting two 4·7-in. and smaller guns ; eight *ex*-Austrian r.b.'s, 260 tons, 28 knots, two 2·5-in. ; two patrol boats, 36 tons ; six minelayers (*ex*-German, 1918), 330–512 tons, 15 knots, two 3·9-in., forty mines ; five minesweepers, 120 tons, 9 knots ; one minesweeper, 78 tons, 17 knots ; one seaplane dépôt ship, Zmaj (built at Hamburg, 1929), 1,870 tons, 15 knots. Training ship : Jadran (1931), 720 tons, 8 knots ; two submarine dépôt ships (1895), and auxiliary craft.

One flotilla leader, Dubrovnik, built at Yarrow's, Scotstoun, completed 1932, length 371 feet, displacement 1,880 tons, 42,000 S.H.P., speed 37 knots, carries four 5·5-in., two 3·4-in. A.A., six 1·5-in. A.A., two twin 2-pr., two triple 21-in. torpedo tubes and forty mines.

M.T.B.'s : Two Thornycroft (1927), 15 tons, 40 knots, 1 m., two 18-in. torpedo tubes, four depth charges. Eight built at Lursen (1936–37), 60 tons, 34 knots, one 1·5-in. A.A., two torpedo tubes.

Destroyers : Beograd (Nantes, 1939), 1,190 tons, 38 knots, four 4·7-in. guns, six 21-in. torpedo tubes ; Zagreb and Ljubljana, building at Split, similar.

Flotilla leader, 1,875 tons, five 5·5-in. guns, ten 1·57-in. guns, two m.g., six 21-in. torpedo tubes, building at Split.

BRITISH AND FOREIGN FLOTILLAS.

Great Britain.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme).	Beam.	Draught.							
FLOTILLA LEADERS.												
			ft. ins.	ft. ins.	ft. ins.		Tons		Knots.			
<i>Tribal Class :</i>												
Ashanti	Denny	1938	}									
Bedouin	Vickers	1939										
Eskimo	Walker	1938										
Mashona		1939										
Matabele	Scotts	1939									8 4·7-in. guns	1 Q.
Punjabi		1939									7 sma ler	21"
Sikh	Stephen	1938										200
Somali	Swan Hunter ..	1938										
Tartar		1939			36 6	...	2	1870	44,000	36½		
Afridi	Vickers-Armstrongs	1938										
Gossack .. ..	.. ..	1938										
Ghurka	Fairfields	1938										
Maori .. ..	.. ..	1938										
Mohawk	Thornycroft	1938								8 4·7-in. guns,	1 Q.	
Nubian .. ..	.. ..	1938									21"	
Zulu	Stephen & Sons	1938										
Inglefield ..	Cammell Laird	1937		34 0	...	2	1530	38,000	36½	5 4·7-in.	2 Q.	
Hardy .. ..	.. ..	1936					1505½	38,000	36½	2·5-in. M,	21"	
Faulknor	Yarrow	1935	343	33 9	8 8	2	1460	38,000	36½	5 smaller.		
Duncan	Portsmouth ..	1923	329	33 0	8 8	2	1400	36,000	35½	4 4·7-in.	2 Q.	
Kempenfelt ..	Dockyard	1932	329	33 0	8 7	..	1390	36,000	35½	1 3-in. A.A.	2 Q.	
Keith	J. S. White ..	1932	323	32 3	8 6	2	1400	34,000	35½	2 2-pr. 1 M., 4 L.	2 Q.	
	Vickers	1931								4 4·7 in., 2 2-prs.	2 Q.	
Codrington ..	Swan Hunter ..	1930	343	33 9	10 0	2	1510	39,000	35	1 M., 4 L.	2 Q.	
	.. ..									5 4·7-in., 2 2-prs.,	21"	
	.. ..									1 M., 4 L.	185	
† Wallace	Thornycroft ..	1919								5 4·7-in.		
Keppel .. ..	.. ..	1925	329	31 11	12 4	2	1480	40,000	36	1 3-in. A.A.	2 T.	
Broke, ex-Rooke	.. ..	1925								2 2-pr. A.A.	21"	
	.. ..									1 M., 4 L.	182	
Douglas' .. ..	.. ..	1918										
Campbell .. ..	.. ..	1918										
Mackay, ex-Claverhouse	Cammell Laird ..	1919	332 6	31 9	12 3	2	1530	40,000	36·5	5 4·7-in.	2 T.	
Malcolm .. ..	.. ..	1919								1 3-in. A.A.		
Montrose	Hawthorn Leslie	1918								2 2-pr. A.A.	21"	
	.. ..									1 M., 4 L.	182	

† Escort vessel armed with 4-in. guns.

DESTROYERS.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme).	Beam.	Draught.							
			Feet.	ft. ins.	ft. ins.		Tons.		Knots.			
<i>Napier, Milne, Laforey, Kelly, Javelin, Intrepid, Hero, Greyhound, Fearless, Eclipse, Defender, Beagle, & A casta Classes :</i>												
Napier (leader)	Fairfield .. ..	.. ..					1935					
Nestor	John Brown ..	.. ..										
Nerissa .. ..	.. ..									4·7 in		
Nizam	Denny .. ..	.. ..	Bldg.				1920					
Noble .. ..	.. ..											
Nonpareil ..	Thornycroft ..	.. ..										
Norman .. ..	.. ..											
Norseman ..	Scotts .. ..	.. ..					1693					
Milne (leader)	Parsons (Hulls by Vickers)	.. ..										
Marksmen ..	.. ..											
Marne .. ..	.. ..											
Martin	Stephens .. ..	.. ..	Bldg.				1690			4·7 in.		
Matchless ..	.. ..											
Meteor	Fairfields .. ..	.. ..										
Musketier ..	.. ..											
Myrmidon ..	.. ..											

Torpedo tubes : T. = triple.

Q. = quadruple.

Great Britain—continued.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme.)	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots.			
DESTROYERS—												
<i>Javelin, etc., Classes</i>												
<i>—continued.</i>												
Lafrey (leader)	Yarrow ..	Bldg.	..	..	..	..	1935	..	..	4.7 in.	..	..
Lance ..	Cammell Laird ..		..	..	..	..	1920	..	..	4.7 in.	..	..
Larne ..	Hawthorn Leslie ..		..	..	..	..	1920	..	..	4.7 in.	..	..
Lively ..	Scotts ..		..	..	..	..	1695	..	..	4.7 in.	..	..
Legion ..	H'wthorn Leslie ..		..	..	..	..	1695	..	..	4.7 in.	..	..
Lightning ..	John Brown ..	1939	..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	..
Lookout ..	Denny ..		..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	..
Loyal ..	Fairfield ..		..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	..
Kelly (leader)	Swan Hunter ..		..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	..
Kashmir ..	Thornycroft ..		..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	..
Kandahar ..	White ..	1939	..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Kelvin ..	Yarrow ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Khartoum ..	John Brown ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Kimberley ..	Denny ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Kingston ..	Fairfield ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Kipling ..	Swan Hunter ..	1939	..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	175
Jackal ..	Thornycroft ..		..	35 0	..	..	1690	40,000	36	6 4.7 in. guns 7 smaller	10 21"	175
Jaguar ..	White ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Jono ..	Yarrow ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Janus ..	John Brown ..		..	35 0	..	..	1695	..	..	6 4.7 in. guns 7 smaller	10 21"	175
Javelin ..	Denny ..	1937	323	33	8 1/2	2	1370	31,000	36	4 4.7-in. guns 7 smaller	10 21"	145
Jersey ..	Fairfield ..		323	33	8 1/2	2	1370	31,000	36	4 4.7-in. guns 7 smaller	10 21"	145
Jervis (leader)	Swan Hunter ..		323	33	8 1/2	2	1370	31,000	36	4 4.7-in. guns 7 smaller	10 21"	145
Jupiter ..	Thornycroft ..		323	33	8 1/2	2	1370	31,000	36	4 4.7-in. guns 7 smaller	10 21"	145
Icarus ..	White ..		323	33	8 1/2	2	1370	31,000	36	4 4.7-in. guns 7 smaller	10 21"	145
Ilex ..	Yarrow ..	1936	323	33 0	8 6	2	1340	34,000	36	4 4.7 in. 7 smaller	2 Q. 21"	145
Iris ..	Hawthorn Leslie ..		323	33 0	8 6	2	1340	34,000	36	4 4.7 in. 7 smaller	2 Q. 21"	145
Ivanhoe ..	Scotts ..		323	33 0	8 6	2	1340	34,000	36	4 4.7 in. 7 smaller	2 Q. 21"	145
Imogen ..	Denny ..		323	33 0	8 6	2	1340	34,000	36	4 4.7 in. 7 smaller	2 Q. 21"	145
Imperial ..	Swan Hunter ..		323	33 0	8 6	2	1340	34,000	36	4 4.7 in. 7 smaller	2 Q. 21"	145
Intrepid ..	Vickers-Armstrong ..	1936	323	33 3	8 6	2	1335	31,000	36	4.7-in. 2.5-in. M. 5 smaller	2 Q. 21"	145
Impulsive ..	Griffin ..		323	33 3	8 6	2	1335	31,000	36	4.7-in. 2.5-in. M. 5 smaller	2 Q. 21"	145
Hero ..	Garland ..		323	33 3	8 6	2	1335	31,000	36	4.7-in. 2.5-in. M. 5 smaller	2 Q. 21"	145
Hereward ..	Fairfields ..		323	33 3	8 6	2	1335	31,000	36	4.7-in. 2.5-in. M. 5 smaller	2 Q. 21"	145
Hostile ..	Stephen & Sons ..		323	33 3	8 6	2	1335	31,000	36	4.7-in. 2.5-in. M. 5 smaller	2 Q. 21"	145
Hotspur ..	Thornycroft ..	1935	329	33 3	8 6	2	1350	36,000	36	4 4.7-in. 2.5-in. M. 5 smaller.	2 Q. 21"	145
Hasty ..	Cammell Laird ..		329	33 3	8 6	2	1350	36,000	36	4 4.7-in. 2.5-in. M. 5 smaller.	2 Q. 21"	145
Havock ..	Brown ..		329	33 3	8 6	2	1350	36,000	36	4 4.7-in. 2.5-in. M. 5 smaller.	2 Q. 21"	145
Hunter ..	John Brown ..		329	33 3	8 6	2	1350	36,000	36	4 4.7-in. 2.5-in. M. 5 smaller.	2 Q. 21"	145
Hyperion ..	Denny ..		329	33 3	8 6	2	1350	36,000	36	4 4.7-in. 2.5-in. M. 5 smaller.	2 Q. 21"	145
Grevhoun ..	Parsons/Vickers-Armstrong ..	1934	329	33 3	8 6	2	1375	36,000	36	4 4.7-in. 2.5-in. M. & G. 5 smaller.	2 Q. 21"	145
Griffin ..	Escapade ..		329	33 3	8 6	2	1375	36,000	36	4 4.7-in. 2.5-in. M. & G. 5 smaller.	2 Q. 21"	145
Garland ..	Electra ..		329	33 3	8 6	2	1375	36,000	36	4 4.7-in. 2.5-in. M. & G. 5 smaller.	2 Q. 21"	145
Gipsy ..	Encounter ..		329	33 3	8 6	2	1375	36,000	36	4 4.7-in. 2.5-in. M. & G. 5 smaller.	2 Q. 21"	145
Gallant ..	Esk ..		329	33 3	8 6	2	1375	36,000	36	4 4.7-in. 2.5-in. M. & G. 5 smaller.	2 Q. 21"	145
Grenade ..	Express ..	1932— 1933	317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Grafton ..	Defender ..		317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Glowworm ..	Diamond ..		317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Fearless ..	Decoy ..		317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Foresight ..	Dainty ..		317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Foxhound ..	Delight ..	1933	317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Fortune ..	Diana ..		317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Forester ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Fury ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Fame ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Firedrake ..		1933	317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Eclipse ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Echo ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Escapade ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Escort ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Electra ..		1933	317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Encounter ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Esk ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Express ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Defender ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Diamond ..		1933	317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Decoy ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Dainty ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Delight ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145
Diana ..			317 1/2 (b.p.)	33	8 6	2	1375	35,000	36	4 4.7-in. 1.3-in. A.A. 7 smaller	2 Q. 21"	145

Torpedo tubes: T. = triple. Q. = quadruple.
† Damaged and beached.

BRITISH DESTROYERS.

Great Britain—continued.

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Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standards Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length. (Extreme)	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots.			
DESTROYERS—												
Javelin, etc., Classes—												
continued.												
Basilisk ..	Brown ..	1931	323	32½	8½	2	1360	34,000	36½	4 4·7-in., 2 2-pr. 1 M., 4 L.	2 Q. 21"	140
Beagle ..												
Boardicea ..												
Boreas ..												
Brazen ..												
Brilliant ..	Swan, Hunter	1930	323	32½	8½	2	1350	34,000	35½	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 Q. 21"	140
Bulldog ..												
Acasta ..												
Achates ..												
Acheron ..												
Active ..	Hawthorn Leslie	1930	323	32½	8½	2	1350	34,000	35½	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 Q. 21"	140
Antelope ..												
Anthony ..												
Ardent ..												
Arrow ..												
	Vickers-Armstr.	1930	323	32½	8½	2	1350	34,000	35½	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 Q. 21"	140
Thornycroft Type:												
Amazon ..	Thornycroft ..	1927	323	31½	9	2	1350	39,500	37	4 4·7-in., 2 2-pr. 1 M., 4 L.	2 T. 21"	140
Yarrow Type:												
Ambuscade ..	Yarrow ..	1927	322	31	8½	2	1170	33,000	37			
Admiralty "S" Class:												
Saladin ..	Stephen ..	1919	276	26½	10½	2	905	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	103
Sardonyx ..	" ..	1919										
Scimitar ..	Brown ..	1918										
Tenedos ..	Haw. Leslie	1919										
Thanet ..	" ..	1919										
Thracian ..	" ..	1922										
Stronghold ..	Scott ..	1919										
Sturdy ..	" ..	1919										
Scout ..	Brown ..	1918										
Shikari ..	{Doxford } {Chatham }	1924										
Admiralty "V" Class:												
Vansittart ..	Beardmore ..	1919	312	29½	10½	2	1120	27,000	34	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T. 130	120
Venomous ..	Brown ..	1919										
Verity ..	" ..	1919										
Volunteer ..	Denny ..	1919										
Veteran ..	Brown ..	1919										
Wanderer ..	Fairfield ..	1919										
Wren ..	Yarrow ..	1923										
Whitshed ..	Swan Hunter	1919										
Wild Swan ..	" ..	1919										
Witherington ..	J. S. White	1919										
Wivern ..	" ..	1919	312	29½	10½	2	1120	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T. 120	120
Wolverine ..	" ..	1920										
Worcester ..	" ..	1922										
Whitehall ..	{Swan Hunter } {Chatham }	1925										
Walpole ..	Doxford	1918										
†Whitley ..	" ..	1918										
†Wryneck ..	Palmer ..	1918										
Windsor ..	Scott ..	1918										
Wrestler ..	Swan Hunter	1918										
Wessex ..	Haw. Leslie	1918										
†Winchester ..	J. S. White	1918	312	29½	10·7	2	1100	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T. 21"	120
†Wolfhound ..	Fairfield	1918										
†Westminster ..	Scott ..	1918										
Westcott ..	Denny ..	1918										
Wakeful ..	Brown ..	1917										
Walker ..	Denny ..	1918										
Warwick ..	Haw. Leslie	1918										
Watchman ..	Brown ..	1918										
Whirlwind ..	Swan, Hunter	1918										
Winchelsea ..	J. S. White	1918										
Vanessa ..	Beardmore ..	1918	312	29½	10·7	2	1100	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T. 21"	120
†Vanity ..	" ..	1918										
Vidette ..	Stephen	1918										
†Vivien ..	Yarrow	1918										

Torpedo tubes: D. = double. T. = triple.
† Escort Vessels and armed with 4 4-in. guns.

Great Britain—continued.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standards Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme.)	Beam.	Draught.							
			Feet.	Feet.	Feet.	Tons.			Knots.			
DESTROYERS—Admiralty "V" Class—continued.												
†Valentine	C. Laird	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120
†Valorous	Denny	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	{ 1 T., 1 D.	
Vimy (late Vancouver) ..	Beardmore ..	1918								{ 4 4-in., 1 2-pr., 1 M., 4 L.	3	
Vanoc	Brown	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	{ 2 T.	
Vanquisher	"	1917	312	29½	10½	2	1090	27,000	34	{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D.	
†Vega	Doxford	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	{ 2 T.	
Velo	"	1918								{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D.	
Venetia	Fairfield	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	{ 2 T.	
†Verdun	Haw. Leslie ..	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D.	120
Versatile	"	1918								{ 4 4-in., 1 2-pr., 1 M., 4 L.	{ 2 T.	
Vesper	Stephen	1918								{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 T., 1 D.	
†Vimiera	Swan Hunter ..	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
Vivacious	Yarrow	1917								{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 T.	
Vortigern	J. S. White ..	1918								{ 4 4-in., 1 2-pr., 1 M., 4 L.	1 D.	
Thornycroft "V" Class:												
Witch	{ Thornycroft } { Devonport }	1924	312	30½	10-9	2	1140	30,000	35	{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120
Wishart	{ Thornycroft }	1920								{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
†Woolston	"									{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
†Wolsey	"	1918	312	30½	10½	2	1120	30,000	35	{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120
†Viceroy	"									{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
Viscount	"									{ 4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
Admiralty "R" Class:												
Skate	Brown	1917	276-276½	26½	10½	2	900	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	98

Torpedo tubes: D.=double. T.=treble.
† Escort Vessels and armed with 4 4-in. guns.

SUMMARIES.

Name or Number.	Where Built.	Completed.	Dimensions.			No. of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement (War).		
			Length (Extreme)	Beam.	Draught.									
			Feet.	Feet.	Feet.		Tons.		Knots.					
Unity Class:														
Unity	Vickers ..	1938	180	16'1	12'9	..	540	615	11½	2 small guns	6	27		
Ursula								730	825	10				
Triton Class:														
Tetrach	Vickers	Bldg.	..	..	..	..	1,090	..	..	4-in.	..	..		
Talisman	Cammell Laird	Bldg.							1,575					
Torbay	Chatham	Bldg.												
Triton	Vickers-Armstrong	1938												
†Thetis	Cammell Laird	1939	205	26½	12	..	1,090	2,500	15½	1 4-in. gun	6	..		
Triumph									1,575	1,450	9			
Trident	Vickers	Bldg.	..	..	..	..	..	..	..	..	..	..		
Tribune									..	..	..	..	..	..
Thistle	Cammell Laird	Bldg.	..	..	..	..	..	..	..	..	..	..		
Taku	Scott's	Bldg.	..	..	..	..	1,090	..	..	..	..	..		
Tarpon	Vickers	Bldg.	..	..	..	..	..	..	..	..	..	..		
Triad	Vickers	Bldg.	..	..	..	..	..	..	..	..	..	..		
Truant	Scott's	Bldg.	..	..	..	..	..	..	..	..	..	..		
Tuna	Chatham	Bldg.	..	..	..	..	..	..	..	..	..	..		
Tigris														
Thames Class:														
Thames	Vickers-Armstrong	1932	345	28	13'5	2	1,805	10,000	21½	1 4-in., 2 smaller	6	60		
Severn	Vickers-Armstrong	1935	345	28	13'7	2	2,680	2,500	10					
Clyde							1,860	10,000	22½		..	60		
							2,723	2,500	10					

† Foundered on trials but salvaged later.

Great Britain—continued.

SUBMARINES—continued.

Name or Number.	Where Built.	Completed.	Dimensions.			No. of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme).	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots.			
Porpoise Class :*												
Porpoise ..	Vickers-Arm- strong	1933	289	29·8	13·8	..	1 500 2,053	3,300 1,630	15 8½	1 4-in., 2 smaller	6	55
Grampus ..	Chatham ..	1937	271½	25½	15	2	1,520 2,157	3,300 1,630	15½ 8½	1 4-in., 2 smaller	6	55
Narwhal ..	Vickers ..	1935										
Rorqual ..	Scott's ..	1938										
Cachalot ..	Chatham ..	1939										
Seal ..												
Swordfish Class :												
Sunfish ..	Chatham ..	1937	208·7	24	10·5	2	670 960	1,900 1,300	15 10	3-in., 1 smaller	6	40
Sterlet ..		1938	208·7	24	10·5	2	670 960	1,550 1,300	13½ 10			
Speardfish ..	Cammell Laird	1936										
Seawolf ..	Scott's ..	1938										
Salmon ..	Cammell Laird	1938										
Snapper ..	Chatham ..	1935										
Shark ..		1934										
Sealion ..	Cammell Laird	1934										
Sturgeon ..	Chatham ..	1933	202·5	24	10·5	2	640 927	1,550 1,300	13½ 10			
Swordfish ..		1932										
Rainbow Class :												
Rainbow ..	Chatham ..	1932	290	29·8	13·8	2	1,475 2,035	4,400 1,320	17½ 9	1 4-in. 2 smaller	8	53
Regent ..	Vickers-Arm- strong	1930										
Regulus ..		1930										
Rover ..		1931										
Parthian Class :												
Parthian ..	Chatham ..	1931	290	29·8	13·7	..	1,475 2,040					
Perseus ..	Vickers-Arm- strong	1930										
Proteus ..												
Pandora ..	Cammell Laird	1931										
Phoenix ..												
Odin Class :												
Odin ..	Chatham ..	1929	283½	29·8	13·7	..	1,475 2,038	4,400 1,320	17½ 9	1 4-in., 2 Lewis	8	53
Olympus ..	Beardmore ..	1930										
Orpheus ..	Beardmore ..	1930										
Osiris ..	Vickers ..											
Oswald ..	Vickers ..	1929										
Otus ..	Vickers ..											
Oberon Class :												
Oberon ..	Chatham ..	1927	270	28	13·2	..	1,311 1,830	2,950 1,350	15 9	1 4-in., 2 Lewis	8	53
Otway ..	Vickers ..	1927	275	27·7	13·3	..	1,354 1,872	3,000 1,350	15½ 9	1 4-in., 2 Lewis	8	53
L Class :												
L27 ..	Vickers ..	1926	288½	23½	11·7	..	760 1,080	2,400 1,600	17½ 10½	1 4-in., 1 Lewis	4	41
L26 ..	Vickers ..	1926										
L23 ..	Vickers ..	1924										
H Class :												
H50 ..	Beardmore ..	1920	171	15·75	12·5	2	410 500	480 320	13 10½	1 Lewis	4	23
H49 ..	Beardmore ..	1919										
H44 ..	Armstrong ..	1920										
H43 ..	Armstrong ..	1919										
H34 ..	Cammell Laird	1919										
H33 ..	Cammell Laird	1919										
H32 ..	Vickers ..	1919										
H31 ..	Vickers ..	1919										
H28 ..	Vickers ..	1918										

* Minelaying submarines.

Great Britain—continued.

SLOOPs

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
		ft. ins.	ft. ins.	ft. ins.								
Fast Escorts:												
Atherstone	..	..	..	..	..	Cammell Laird	Cammell Laird					
Berkeley	..	..	..	..	..							
Cattistock	..	..	..	..	..	Yarrow	Yarrow					
Cleveland	..	..	..	..	..							
Cotswold	..	..	..	..	..							
Cottesmore	..	..	..	..	..							
Eglington	..	..	..	..	..	Vickers Walker	Parsons					
Exmoor	..	..	..	..	..	J. Brown	J. Brown					
Fernie	..	..	..	..	..							
Garth	..	..	..	..	..							
Hambledon	..	..	..	..	..	Swan Hunter	Wallsend Slipway					
Holderness	..	..	..	..	..							
Mendip	..	..	..	..	..							
Meynell	..	..	..	..	..							
Pytchley	..	..	..	..	..	Scotts	Scotts					
Quantock	..	..	..	..	..	J. S. White	J. S. White					
Quorn	..	..	..	..	..							
Southdown	..	..	..	..	..	Stephens	Stephens					
Tynedale	..	..	..	..	..							
Whaddon	..	..	..	..	..							
Convoy												
Escorts:												
Erne	1250	..	..	..	4,300	Furness	Richardson Westgarth	Bldg.	..	6 1/2-in. H.A. 10 smaller		
Ibbs	..	..	..	..	..	J. S. White	J. S. White	1937	1938			
Egret	1200	282	37 6	8 4	3,600	Denny	Denny	1937	1938	8 1/2-in., 5 smaller	19 1/2	
Auckland	..	..	..	..	..	Thornycroft	Thornycroft	1938	1939			
Pelican	..	..	..	..	..							
Black	1250	..	..	..	4,300	Yarrow	Yarrow	1939	Bldg.	6 1/2-in. H.A. 10 smaller	19 1/2	
Swan	..	..	..	..	..							
Flamingo	..	..	..	..	..							
Convoy												
Sloops:												
† Enchantress	1085	282	37 0	8 6	3,300	J. Brown	J. Brown	1934	1935	4 1/2-in. guns and 2 on deposit 4 8-pr.	18 1/2	125
* Stork	1100	282	37 0	8 6	3,300	Denny	Denny	1936	1936	6 1/2-in. guns 2 8-pr.	18 1/2	..
Bittern	1190	..	..	..	..	J. S. White	J. S. White	1938	1938	5 smaller		
Coastal												
Sloops:												
Kingfisher	510	234 b.p.	26 6	6 6	3,600	Fairfield	Fairfield	1935	1935		20	..
Mallard	..	..	..	..	..	Stephen	Stephen	..	1936		20	60
Puffin	..	..	..	..	..							
Sheldrake	530	234 b.p.	26 6	6 6	3,600	Thornycroft	Thornycroft	..	1937	1 1/2-in. gun 8 smaller	20	..
Kittiwake	..	..	..	..	..	Yarrow	Yarrow	..	1938		20	..
Widgeon	..	..	..	..	..	Denny	Denny					
Guillemot	580	..	..	..	..	J. S. White	J. S. White		1939			
Pintail	..	..	..	..	..							
Shearwater	..	..	..	..	..							
Grimsby												
Class:												
Grimsby	..	..	..	..	..	Devonport		1933	1934	2 1/2-in. guns. 1 3-in.		
† Leith	..	..	..	..	..	Devonport				12 smaller		
Lowestoft	990	266	36 0	7 6	2,000	Devonport	J. S. White	1935	1935		16 1/2	100
† Wellington	..	..	..	..	..	Devonport		1934	1935			
Londonderry	..	..	..	..	..	Chatham						
Deptford	..	..	..	..	..							
Aberdeen	990	..	..	..	..	Devonport	Thornycroft	1935	Bldg.	3 1/2-in. 12 smaller 4 1/2-in. 12 smaller		
Fleetwood	..	..	..	..	..	Devonport						
SLOOP MINE- SWEEPERS.												
Halcyon												
Class:												
Halcyon	815	246	33 6	7 3	1,770	J. Brown	J. Brown	1934	1934	2 1/2-in. 5 smaller	17	80
Skipblack	..	..	..	..	..	Thornycroft	Thornycroft					
Harrier	..	..	..	..	..							
Hussar	..	..	..	..	..	Hamilton	Beardmore	1935	1935			
Speedwell	..	..	..	..	..	J. S. White	J. S. White	1935	1936	2 1/2-in. 9 smaller	17	80
Niger	815	246	33 6	7 7	2,000							
Salamander	..	..	..	..	..	Devonport	..	1936	1937	2 1/2-in. 5 smaller	..	..
Hebe	..	..	..	..	..				1937			
Sharp	..	..	..	..	..				1937			
shooter	..	..	..	..	..				1938			
Hazard	..	..	..	..	..	Wm. Gray	..	1937			..	..
* Gleaner	..	..	..	..	..							

* Will be employed as surveying vessels and will carry 1 small gun only.

† In addition to her normal duties Enchantress will be made available for occasional use by the Board of Admiralty.

‡ Attached to New Zealand Division.

Great Britain—*continued.*Sloops—*continued.*

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where Built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.				
		ft. ins.	ft. ins.	ft. ins.												
<i>Halcyon</i> Class—cont.																
Gossamer	815	230 b.p.	33 6	7 0	1,750	Hamilton's Devonport	Stephen Richardsons, Westgarth	1937	1938	2 4-in. H.A. 5 smaller	17					
Leda																
Seagull	830					Ailsa	Thornycroft	1937	1938	..	17					
Franklin	..					Caledon	Parsons									
Jason						Devonport	Barclay Curle									
Scott						Devonport	Barclay Curle									
Bramble	875					Devonport	J. S. White	1938	1939	2 4-in. H.A. 5 smaller	17	..				
Britomart																
Speedy																
<i>Shoreham</i> Class :																
Repeat Shore- ham Class :																
Falmouth.																
Milford	1060	281 4	35 0	8 3	2,000 P.T. (G.)	Devonport	Hawthorn Leslie Yarrow Yarrow	1932	1932	2 4-in., A.A. 4 3-pr. 8 L.	100 16½	..				
Weston						Chatham	Hawthorn Leslie		1933							
Dundee																
Bideford	1105	281 4	35 0	8 0	2,000 P.T. (G.)	Devonport	J. S. White & Devonport	1931	1931	1 4-in., 1 4-in. A.A. 4 3-pr. 8 L. Fowey 2 4-in. H.A. 13 smaller guns	100 16½	..				
Rochester						Chatham	J. S. White & Chatham	1932	1932							
Fowey						Devonport	J. S. White & Devonport	1930	1931							
Shoreham.						Chatham	J. S. White & Chatham	1930	1931							
<i>Hastings</i> Class :																
Hastings	1025	266 4	34 1	9 1	2,000 P.T. (G.)	Devonport	Devonport	1930	1931	1 4-in., 1 4-in. A.A. 2 3-pr. 8 L. Hastings 2 4-in., 9 smaller	16½	..				
Penzance						Devonport	Devonport	1930	1931							
Folkestone	1045					Swan, Hunter	Hawthorn, Leslie	1930	1930							
Scarborough						Swan, Hunter	Hawthorn, Leslie	1930	1930							
<i>Bridgewater</i> Class :																
Bridgewater	1045	266 4	34 0	8 6	2,000 { P.T. (G.)	Hawthorn Leslie	Hawthorn Leslie	1928	1929	2 4-in. A.A. Bridgewater 10 smaller, Sand- wich 11 smaller	16½	95				
Sandwich																
<i>Arabis</i> Class :																
Lupin†	1175	267 9	33 6	12 0	2,000 recip.	Simons	Simons	1916	1916	1 4-in., 1 2-pr., 8 L.	16 -17	100				
Rosemary						Richardson Duck	Blair	1915	1916	1 4-in., 2 3-pr. 2 M., 8 L.						
<i>Acacia</i> Class :																
Foxglove	1165	262 6	33 0	12 6	1,800 recip.	Dunlop Bremner	Dunlop Bremner	1915	1915	2 4-in., 4 3-pr. 2 2-pr., 8 L.	16-17	100				

† Converted to oil-burning.

Great Britain—continued.

TWIN-SCREW MINE-SWEEPERS, RIVER GUNBOATS.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
TWIN-SCREW MINE- SWEEPERS.												
Bangor . . .	..	..	..	..	..	Harland & Wolff	Harland & Wolff	Bldg.				
Blackpool . . .	..	..	..	..	..	Denny	Harland & Wolff					
Bridlington . . .	..	..	..	..	..	Denny	Harland & Wolff					
Bridport . . .	..	..	..	..	..	Blyth	Whites (Hebburn)					
Blyth . . .	..	..	..	..	..	Blyth	Whites (Hebburn)					
Peterhead . . .	..	..	..	..	..	Ailsa	Thornycroft					
Polruan . . .	..	..	..	..	..	Ailsa	Thornycroft					
Rye . . .	..	..	..	..	..	Hamilton	J. S. White					
Rothcay . . .	..	..	..	..	..	Hamilton	J. S. White					
Tenby . . .	..	..	..	..	..	Blyth	Metro-Vickers					
Cromarty . . .	..	..	..	..	..	Blyth	British Thompson					
Dunbar . . .	..	..	..	..	..	Hamilton	Houston Co.					
Ilfracombe . . .	..	..	..	..	..	Hamilton	English Electric Co.	1918	1918	1 4-in., 1 12-pr. A.A. Alresford, Caterham, Ross and Saltburn no armament.	16	73
Llandudno . . .	..	..	..	..	..	Ailsa	Lobnitz					
Beaumaris . . .	..	..	..	..	..	Ailsa	Lobnitz					
Boston . . .	..	..	..	..	..	Lobnitz	Plenty					
Rhyl . . .	..	..	..	..	..	Robb	Plenty					
Romney . . .	..	..	..	..	..	Ailsa	Ailsa					
Sidmouth . . .	..	..	..	..	..	Ailsa	G. Clark					
Stornoway . . .	..	..	..	..	..	Ailsa	Ailsa					
Aberdare . . .	..	..	..	..	..	Ailsa	W. H. Allen					
Abingdon . . .	..	..	..	..	..	Ailsa	W. H. Allen					
Albury . . .	..	..	..	..	..	Ailsa	W. H. Allen					
Alresford . . .	..	..	..	..	..	Ardrossan	W. H. Allen					
Bagshot . . .	..	..	..	..	..	Dry Dock Co.						
Derby . . .	..	..	..	..	..	Clyde S. B. Co.	Clyde S. B. Co.	1918	1918	1 4-in., 1 12-pr. A.A. Alresford, Caterham, Ross and Saltburn no armament.	16	73
Dundalk . . .	..	..	..	..	..	Do.	Do.					
Dunoon . . .	..	..	..	..	..	Do.	Do.					
Fermoy . . .	..	..	..	..	..	Dundee S.B. Co.	Cooper & Greig					
Fareham . . .	..	..	..	..	..	Dunlop.	Bremner					
Elgin . . .	710	231 0	28 7	9 0	2,200 recip.	Simons	Simons					
Sutton . . .	..	..	..	..	..	McMillan	Yarrow					
Saltash . . .	..	..	..	..	..	Murdoch & Murray	Do.					
Saltburn . . .	..	..	..	..	..	Do.	Do.					
Selkirk . . .	..	..	..	..	..	Do.	D. Rowan					
Ross . . .	..	..	..	..	..	Lobnitz	Lobnitz					
Widnes . . .	..	..	..	..	..	Napier & Miller	Rowan					
Harrow . . .	..	..	..	..	..	Eltringham	Wallsend Slipway	1918	1918	1 4-in., 1 12-pr. A.A. Alresford, Caterham, Ross and Saltburn no armament.	16	35
Huntley . . .	..	..	..	..	..	Do.	Eltringham					
Lydd . . .	..	..	..	..	..	Fairfield	Fairfield					
Stoke . . .	..	..	..	..	..	C. Rennoldson	Shields Eng. Co.					
Pangbourne . . .	..	..	..	..	..	Lobnitz	Lobnitz					
Tedworth . . .	675	231 0	28 0	9 0	1,800 recip.	Simons	Simons					
RIVER GUN- BOATS.												
Scorpion . . .	700	208 9	34 8	5 5	4,500	J. S. White	White	1837	1938	2 4-in.; 1 5.7-in. Howitzer, 12 smaller	17	..
Robin . . .	226	150 b.p.	26 8	3 0	800 recip.	Yarrow	Yarrow	1934	1934	2 4-in.; 1 5.7-in. Howitzer, 10 smaller	12½	35
Dragonfly . . .	585	..	..	..	3,800	Thornycroft	Thornycroft	1838	Bldg.	2 4-in.; 1 5.7-in. Howitzer, 16-pr., 8 L.	17	..
Grasshopper . . .	..	..	..	..	..	Thornycroft	Thornycroft	1939	Bldg.	2 4-in.; 1 5.7-in. Howitzer, 16-pr., 8 L.	17	..
Sandpiper . . .	185	160 0 b.p.	30 8	1 10	600 recip.	Thornycroft	Thornycroft	1933	1933	2 4-in.; 1 5.7-in. Howitzer, 16-pr., 8 L.	11½	35
Locust . . .	585	..	..	..	..	Yarrow	Yarrow	Bldg.	1931	1 5.7-in. Howitzer, 26-pr., 8 L.	15	55
Mosquito . . .	372	150 0	28 8	4 9	2,250 (G.)	Yarrow	Yarrow					
Falcon . . .	..	..	..	..	..	Yarrow	Yarrow					
Gannet . . .	310	185 0	29 0	4 0	2,250 (G.)	Yarrow	Yarrow					
Petrel . . .	..	..	..	..	..	Yarrow	Yarrow					
Seamew . . .	262	168 0	27 0	4 0	1,370 (G.)	Do.	Do.					
Tern . . .	..	..	..	..	..	Do.	Do.					

Great Britain—continued.

RIVER GUNBOATS.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
RIVER GUN- BOATS—cont.												
Aphis . . .						Allas	Allas	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.	14	55
* Bee . . .						Do.	Do.	1915	1916	1 3-in. A.A., 2 3-pr., 1 2-pr., 8 L.		
Cicada . . .						Barclay Curle	Barclay Curle	1915	1916	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Cockchafer . . .						Do.	Do.	1915	1916	2 6-in., 1 3-in. A.A., 8 L.		
Cricket . . .						Do.	Do.	1915	1916	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Gnat . . .	625	237 6	36 0	4 6	2,000 recip.	Lobnitz	Lobnitz	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Ladybird . . .						Do.	Do.	1915	1916	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Mantis . . .						Sunderland S.B. Co.	N.E. Marine	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Moth . . .						Do.	Do.	1915	1916	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Scarab . . .						Wood, Skin- ner	Do.	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Tarantula . . .						Do.	Do.	1915	1916	1 6-in., 1 3-in. A.A., 1 2-pr. 8 L.		

* To pay off.

Argentine Republic.

Name or Number.	Where Built.	Launched	Dimensions.			Number of Screws	Displacement. Tons	Horse-Power.	Speed. Knots.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.) Feet.	Beam Feet.	Draught. Feet.								Coal Oil Tons.
FLOTILLA LEADERS— Cervantes (ex-Spanish Churrucos)													
Juan de Garay (ex- Spanish Alcala Galiano)	Cartagena ..	1925	318	31½	10½	2	1522	42,000	36	5 4·7 in., 1 2-in. A.A., 4 M	2 triple 21-in.	—	540
Mendoza ..	J. S. White, Cowan	1928								5 4·7 in.,			
La Rioja ..		1929	335	31·8	12½	2	1466	45,000	36 (La Rioja 39·4 t.)	1 3-in. A.A., 2 2-pr., 4 M	2 tripli- 21-in.	160	700
Tucuman ..		1929											
DESTROYERS—													
Catamarca * ..	Schichau ..	1911	288·7	27½	10	2	972	28,000	32	3 4-in. 2 1-pr.	4	100	220
Jujuy † ..	Germania ..	1910									21-in.	100	200
Cordoba * ..	Schichau ..	1910	295½	29·5	10	..	1000	28,000	34·7 t.				
La Plata † ..	Germania ..	1911								4 4·7 in., 8 smaller	2Q	150	450
San Juan ..	J. Brown ..	1937	323	33	8½	..	1350	34,000	35½	4 4·7 in., 8 smaller	2Q	150	450
San Luis ..	Cammell Laird	1937	323	33	8½	..	1350	34,000	35½	4 4·7 in., 8 smaller	2Q	150	450
Misiones ..													
Santa Cruz ..	Vickers, Farrow	1937	323	33	8½	..	1350	34,000	35½	4 4·7 in., 8 smaller	2Q	150	450
Buenos Aires ..													
Entre Rios ..													
Corrientes ..													
SUBMARINES—													
Santa Fe ..	Taranto ..	1931								1 4·7-in.	8	41	—
Salta ..		1932	226½	21½	13	2	850	3,000	17·5	1 2-pr. A.A.	21-in.		
Santiago del Estero		1933					1080	1,300	9				

* Converted to oil-burning, 1927, at Buenos Aires.

† Converted to oil-burning at Buenos Aires.

Torpedo tubes: Q=quadruple.

Brazil.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
DESTROYERS—														
Jaruema	Thornycroft..	Bldg.	322	33	8 3	2	1375	34,000	35.5	4 4.7-in. 8 smaller	8 21-in.	150	..	..
Jaguaribe														
Javary	J. S. White ..	1939	322	33	8 3	2	1375	34,000	35.5	4 4.7-in. 8 smaller	8 21-in.	150	..	..
Jutahy														
Japura	Vickers	Bldg.	360½	34½	9 10	2	1500	43,000	3.65	5 5-in. 8 smaller	12 21-in.	190	..	..
Jarus														
Greenhalgh	St. W.	Bldg.	360½	34½	9 10	2	1500	43,000	3.65	5 5-in. 8 smaller	12 21-in.	190	..	..
Marcello Dias ..														
Marin E. Barres ..	Rio de Janeiro	1908	360½	34½	9 10	2	1500	43,000	3.65	5 5-in. 8 smaller	12 21-in.	190	..	..
Matto Grosso ..														
Parahyba	Yarrow ..	1909	240	23.6	7.5	2	560	8,000	27 (27.1- 28.7 on trials)	2 4-in., 4 3 prs.	2 18-in.	76	140	—
Rio Grande del Norte ..														
Santa Catharina ..	Thornycroft..	1913	265.3	26.5	10	2	934	22,500	31	3 4-in., 1 2-pr.	2 dble. 21-in.	..	—	250
Sergipe														
Marauhao (ex- Por- poise)														
SUBMARINES—														
Humayta	Spezia (Ansaldo Fiat)	1927	282	25.6	14	2	1450	4 800	18.5	14-in. A.A.; carries mines	6 21-in.	65	—	140
Tamoya							1884	2,200	10					
Tymbira	Spezia (Orlando)	1937	197½	21	14½	..	620	1350	14	1 3.9-in. 2 M. A.A.	6 21-in.	33	..	..
Tupy							855	800	8					

Chile.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
DESTROYERS—														
Serrano	Thornycroft's	1928	300	29	9	2	1090	28,000	35	3 4.7-in., 1 3-in.	2 triple 21-in.	130	—	340
Orella														
Riquelme	White.. ..	1912	320	32.6	11.1	3	1850	30,000	31	6 4-in. 4 M.	4 18-in.	190	427	80
Hyatt														
Videla	Vickers Arm- strong's	1929	275	27.5	14.8	2	1520	2750	15	1 4-in.	8 21-in.	54	200	—
Aldea														
Almirante Lynch..	Fore River, U.S.A.	1915	150.3	15.75	12.3	2	355	480	13	..	4 18-in.	22	—	17.5
Almirante Condell														
SUBMARINES—														
Capitan Thompson	Vickers Arm- strong's	1929	275	27.5	14.8	2	1520	2750	15	1 4-in.	8 21-in.	54	200	—
Almirante Simpson														
Capitan O'Brien ..	Fore River, U.S.A.	1915	150.3	15.75	12.3	2	355	480	13	..	4 18-in.	22	—	17.5
H 1. Gualcoia														
H 2. Tequalda														
H 3. Rucumilla														
H 4. Cuale														
H 5. Quidora														
H 6. Frezia														

3 submarines are projected (no money voted)

Denmark.

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes	Complement.	Fuel.		
			Length (Extreme).	Beam.	Draught.								Coal	Oil	
			Feet.	Feet.	Feet.		Tons.		Knots.					Tons	
TORPEDO BOATS.															
FIRST CLASS—															
T4. Glentin ..	} Royal Dockyard, Copenhagen	1934	198·9	19·5	7·8	2	285	6,000	27½	2 3·4-in.,	6	51	—	—	
T5. Hogen ..		1930	198·9	19·5	7·4	2	281	6,000	27½	2 78 M., 2 M.	17·7 in.	51	—	26	
T6. Ornen ..		1929													
T3. Laxen ..		1930													
T1. Dragen ..		1919													
T2. Hvalen ..		1919	126·3	13·9	9	2	110	2,000	24·6f.	2 6-pr. A.A.	(1 in R2-4)	24	15	—	
R4. Havkatten †		1918													
R5. Sælen †		1918													
R3. Nordkaperen †		1918													
R2. Makrelen †		1917													
S6. Narhvalen *		1917													
S5. Havhesten *		1917													
S4. Söhunden *		1917													
S2. Stören *		1916													
S1. Springeren *		1913	148·2	16·9	7·5	2	158	3,480	26·2 f.	1 3-in., 1 M.	4	34	29	—	
P1. Hvalrossen †		1911	126·3	15	9	2	110	2,000	24·3	2 6-pr. A.A.	18 in.	24	15	—	
S3. Sörldderen *	Yarrow & Co.	1911	126·3	15	9	2	110	2,000	24·3	2 6-pr. A.A.	18 in.	24	15	—	
Two in number ..	Copenhagen	Bldg.	279	27·4	8	2	700	21,000	35	2 4-in. 4 1·5-in.	6 21 in.	..	..	..	
SUBMARINES—															
Daphne. D1 ..	} Royal Dockyard, Copenhagen	1926	161	16	8·2		305	900	13·4	1 3-in. A.A.,	6	25	—	—	
Dryaden. D2 ..							380	400	7	1 78 M.	18 in.		16		
Flora. C3 ..	}	1919	155·7	15·7	9	2	301 369	900 640	14·5 10·5	1 6-pr. }	5 18 in.	24	—	13	
Bellona. C2 ..															
Rota. C1 † ..	}	1914	133·3	13·4	8	2	181 231	450 340	13·5 9·8	1 6-pr.	3 18 in.	14	—	9	
Galathea. B12 ..															
Triton. B10 ..															
Ran. B9 ..															
Havkalem. E3 ..	}	1937	155·6	15·3	9·4	2	320 420	600 220	15 8	2 1·5-in.	5 18 in.	20	..	..	
Havfruen. E2 ..															
Havmanden. E1	}	1936	155·6	15·3	9·4	2	320 420	600 220	15 8	2 1·5-in.	5 18 in.	20	..	..	
Havhornen ..															

* Used as minesweepers.

† Used as patrol vessels.

‡ Rota has one deck tube in addition.

France.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Beam.	Draught.								Coal	Oil
FLOTILLA LEADERS—														
Volta	Ch. de Bretagne, Nantes	1936	451	41'1	15	2	2,884	92,000	38	{ 8 5'4-in., 2 1'5-in. A.A.	10 21'7 in.	240	..	—
Mogador	Lorient.. ..	1937												
Marceau	Nantes	Bldg												
Hoche	Lorient													
Kléber	Ch. de France, Dunkerque													
Desaix	Lorient.. ..	1934	434½	39½	14	2	2,569	74,000	37	{ 5 5'4-in., 4 1'5-in. A.A.	9 21'7 in.	220	— 650	
Le Fantastique	Lorient.. ..													
L'Audacieux	Ch. de la Méditerranée													
Le Mallin	Ch. de France													
L'Indomptable	Ch. Naval Français													
Le Triomphant	Ch. de France	1934												
Le Terrible	Ch. Naval Français													

P

France—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
FLOTILLA LEADERS—														
<i>Contd.</i>														
Vauquelin	Dunkerque	1932												
Kersaint	Nantes ..	1931												
Cassard	Nantes ..	1932	424½	39	14	2	2,441	64,000	36	{ 5 5·4-in., 4 1·5-in. A.A. }	{ 21·7 -in. }	220	—	650
Tartu	Nantes ..	1931												
Maillié Brézé ..	Penhoët ..	1931												
Le Chevalier-Paul ..	Havre ..	1932												
Aigle	Dunkerque													
Vantour	Havre ..	1930	423	40	14	2	2,441	64,000	36	{ 5 5·4-in., 4 1·5-in. A.A. }	{ 21·7 -in. }	220	—	650
Albatros	St. Nazaire													
Gerfaut	Nantes ..													
Milan	Lorient ..	1930	423	40	14	2	2,441	68,000	37	{ 5 5·4-in., 4 1·5-in. A.A. }	{ 21·7 -in. }	220	—	650
Epervier		1928												
Valmy	Penhoët ..	1928												
Verdun	Dunkerque	1930	427	39	15	2	2,436	64,000	36	{ 5 5·4-in., 4 1·5-in. A.A. }	{ 21·7 -in. }	207	—	650
Vauban	Dunkerque	1929												
Lion	Dunkerque	1928												
Bison	Lorient ..	1928												
Guépard	Lorient ..	1924												
Chacal	St. Nazaire	1923												
Jaguar	Lorient Dy.	1924												
Leopard	St. Nazaire	1925	416	37½	17½	2	2,126	55,000	35·5	5 5·1-in.	{ 21·7 -in. }	206	—	530
Lynx	"	1924												
Panthère	Lorient Dy.	1924												
Tigre	Nantes ..	1924												
DESTROYERS—														
L'Aventurier	Bordeaux ..	Bldg.												
L'Opiniâtre	"													
L'Intrepide	La Seyne ..													
Le Temeraire	"													
Le Hardi	Loire ..		363½	36½	10½	2	1,772	58,000	37	{ 6 5·1-in., 2 1·5-in. }	{ 21·7 -in. }	..	..	
Mameluck	"	1928												
Epée	Gironde ..													
Lansquenét	"													
Casque	"													
Fleuret	La Seyne ..													
Le Corsaire	"													
Le Flibustier	"													
Forbin	Havre ..	1928												
Frondeur	Caen ..	1929												
Fougueux	Nantes ..	1928												
Foudroyant	Bordeaux ..	1929												
Basque	Maritime ..	1929												
Bordelais	Bordeaux ..	1928												
Boulonnais	Caen ..	1927	351·7	32·2	10·2	2	1,378	31,000	33	{ 4 5·1-in., 2 1·5-in. A.A. }	{ 21·7 -in. }	146	—	306
Brestois	Nantes ..	1927												
L'Adroit	Dunkerque	1927												
L'Alcyon	Bordeaux ..													
Le Fortune	Caen ..													
Le Mars	Caen ..	1926												
La Palme	Nantes ..													
La Railleuse	Nantes ..													
Bourrasque	Dunkerque	1925												
Cyclone	Havre ..	1925												
Mistral	"													
Orage	Caen ..	1924												
Ouragon	"													
Simoun	St. Nazaire	1924												
Sirocco	Rouen ..													
Tempête	Nantes ..	1925	347	33·0	13·9	2	1,319	33,000	33	{ 4 5·1-in., 2 1·5-in. A.A. }	{ 21·7 -in. }	138	—	300
Tramontane	Bordeaux ..	1924												
Trombe	Harfleur ..													
Typhon	Bordeaux ..	1925												
Tornado	Bordeaux ..	1925												

France—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Coal Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—Contd.													
L'Asile	Nantes ..	Bldg.	295½	30½	8½	2	994	28,000	34	4 3·9-in.	4		
Le Fier													
L'Entreprenant ..													
Le Farouche ..	Nantes ..	Bldg.	295½	30½	8½	2	994	28,000	34	4 3·9-in.	4	..	..
L'Alsacien													
Le Breton													
Le Corse													
Le Tunisien													
Le Normand	La Seyne ..	Bldg.	295½	30½	8½	2	994	28,000	34	4 3·9-in.	4	..	..
Le Parisien													
Le Provençal													
Le Saintongais ..													
Le Niçois													
Le Savoyard													
TORPEDO BOATS—													
La Melpomène ..	Nantes ..	1935	264·9	26·0	9·2	2	610	22,000	34·5	{ 2 3·9-in., 4 M. A.A. }	21·7-in.	..	90
La Pomone													
La Flore													
L'Iphigénie	Nantes ..	1936											
Bombard	Nantes ..	1936											
Bouclier	Le Trait ..	1937											
La Bayonnaise ..	Bordeaux ..	1936											
La Pourcuiante ..	Dunkerque ..	1936											
La Cordelière ..	Normand ..	1936											
L'Incomprise ..	Le Trait ..	1937											
Branle-Bas	Normand ..	1937											
Baliste	Dunkerque ..	1937											

1st class torpedo boat (1900), No. 369, 85 tons, 2000 H.P., 34 knots, 1 3-in. gun, 3 torpedo tubes.

Cruiser Submarines—							Surf.	Surf.	Surf.				
							Sub.	Sub.	Sub.				
Sarcouf	Cherbourg ..	1929	361	29·5	23½	2	2880	7600	18	2 8-in.	14	150	..
							3004	3400	11	2 1·5-in. A.A.	21-in		
1ST CLASS SUBMARINES													
Réunion	..	Bdg.	325½	27½	14	2	1605	12,000	21	1 3·9-in.	..	..	..
Gadeloupe													
La Martinique ..													
Roland Morillot ..	Cherbourg ..												
La Praya	Cherbourg ..												
Agosta	Cherbourg ..	1934											
Beveziers	Cherbourg ..	1935											
Onessant	Brest ..	1936											
Sidi-Ferruchi ..	Brest ..	1937											
Sfax	Ch. de la	1934											
Casablanca	Loire ..	1935											
Le Glorieux	Cherbourg ..	1932											
Le Centaure	Cherbourg ..	1933											
Le Héros	Brest ..	1933											
Le Conquerant ..	Brest ..	1932											
Le Tonnant	Loire ..	1934											
L'Espoir	Cherbourg ..	1931											
Persée	Caen ..												
Protée	La Seyne ..	1930											
Pégase	St. Nazaire ..												
Achille	Brest ..	1933											
Ajax	St. Nazaire ..												
Acheron	Nantes ..	1929											
Argo													
Acteon		1930											

France—continued.

Number and Name	Where Built.	Launched.	Dimensions			Number of Screws.	Displacement. Surf./Sub.	Horse-Power.	Speed. Surf./Sub.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal Oil											
			Length (Extreme.)	Beam.	Draught.																			
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.											
1ST CLASS SUBMARINES																								
Pascal	Brest	1928-1929	302·5	27	16	2	1379 2060	6000 2000	17 10	1 3·9-in., 1 1·5-in. A.A.	11	61	— 96											
Pasteur	Lorient																							
Henri Poincaré ..	Caen																							
Archimède	St. Nazaire																							
Fresnel	La Seyne																							
Monge	Cherbourg ..	1928	302·5	27	16	2	1384 2080	6000 2000	17 10	1 3·9-in. A.A. 1 1-pr. A.A.	11	63	— 96											
Redoubtable	Cherbourg ..	1924																						
Vengeur	Cherbourg ..	1925																						
Requin	Cherbourg ..	1925																						
Morse	Cherbourg ..	1924																						
Narval	Cherbourg ..	1927	257½	23	17½	2	974 1415	2900 1800	16 10	1 3·9-in. A.A.	10	54	..											
Souffleur	Toulon	1925																						
Caiman	Toulon	1926																						
Dauphin	Toulon	1924																						
Espadon	Toulon	1926																						
Marsouin	Brest	1924	1926																					
Phoque	Brest	1926																						
2ND CLASS SUBMARINES																								
L'Aurore	Toulon	Bldg.												238·3	20·3	12·3	2	893 1170	3 00 1400	14·5 9	1 3·9-in.	9	43	..
La Creole	Havre																							
La Bayadère	Le Trait																							
La Favorite	Le Trait																							
L'Africaine	Le Trait																							
L'Artemise	Havre																							
La Gorgone	Havre																							
L'Hermione	Havre																							
L'Andromaque	Havre																							
L'Armide	Worms																							
L'Andromède	Worms																							
L'Astree	Worms																							
La Clorinde	Nantes																							
La Corneille	Nantes																							
L'Antigone	Nantes																							
Phoenix	Proj'd.																							
Ceres	Le Trait	1938	223·5	18·3	11·3	2	600 800	1800 1120	14 9	1 3-in.	9	48	..											
Pallas	Cherbourg ..	1934																						
Minerve	Havre	1935																						
Juno	Worms	1935																						
Vénus	Dubigeon	1934																						
Iris	Dubigeon	1932	224	17½	13	2	597 800	1300 1230	14 9	1 3-in., 2 M.	9	..	..											
Orphée	Ch. Normand.	1932																						
Oréade	Ch. Normand.	1931																						
Orion	Havre	1931																						
Ondine	Havre	1931																						
La Psyché	Ch. Normand	1932	210	20	13	2	558-570 787	1300 1000	14 9	1 3-in., A.A.	21·7 2 15·7	43	..											
La Sybille	Worms																							
La Vestale	Schneider ..																							
La Sultane	Schneider ..																							
Amphitrite	Le Trait																							
Antiope	Havre	1932	216½	20	13	2	565-571 787	1300 1000	14 9·2	1 3-in. A.A.	21·7 2 15·7	43	..											
Atalante	Havre	1932																						
Amazon	Schneider ..	1930																						
Diane	Le Trait	1932																						
Méduse	Havre	1930																						
Argonaute	Schneider ..	1929	216·5	20	13	2	576 766	1200 1000	14 9	1 3-in. A.A.	7 21·7	40	..											
Aréthuse	Schneider ..	1929																						
Ariane	Havre	1925																						
Danaé	Havre	1927																						
Eurydice	Havre	1927																						
Circé	Schneider ..	1925	204·5	21	12·8	2	552 765	1250 1000	14 9	1 3-in. A.A.	7 21·7	40	..											
Calypso	Schneider ..	1926																						
Doris	Schneider ..	1927																						
Thétis	Schneider ..	1927																						
Naïde	Schneider ..	1927																						
Sirène	St. Nazaire	1925	210	21	14½	2	548 744	1300 1000	14 9·5	1 3-in. A.A.	7	39	..											
Galatée	St. Nazaire	1925																						
Galatée	St. Nazaire	1925																						
Galatée	St. Nazaire	1925																						
Galatée	St. Nazaire	1925																						
MINELAYING SUB-																								
MARINES—																								
Perle	Toulon	1933	216·5	23·3	13·5	2	669 910	1300 800- 1000	12 9	1 3-in., 32 mines	5 21·7	40	..											
Diamant	Toulon	1933																						
Rubis	Toulon	1930																						
Nautilus	Toulon	1928																						
Saphir	Toulon	1929																						
Turquoise	Toulon	1929	Bldg.																					
Emeraude	Toulon	Bldg.																						
L'Agate	Toulon	Bldg.																						
Le Corail	Toulon	Bldg.																						
L'Escarboucle	Toulon	Bldg.																						

French submarines are divided into two classes. 1st class: All vessels of 900 tons and above in the surface condition, 2nd class: All smaller vessels, including the minelayers.

Germany.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal Oil
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
(Z 1) Leberech Maass (Z 2) Georg Thiele (Z 3) Max Shultz .. (Z 4) Richard Beltzer (Z 5) Paul Jacobi .. (Z 6) Theodor Riedel (Z 7) Hermann	Deutsche- Werke, Kiel	1935	374	37	9½	..	1625	40,000	36	5 5-in. 4 1½-in., 4 m.	8 21 in.	252	..
(Z 8) Bruno Helnemann (Z 9) Wolfgang Zerker (Z 10) Hans Lody .. (Z 11) Bernd von Arnim	Germania- Werft, Kiel	1935	374	37	9½	..	1625	40,000	36	5 5-in. 4 1½-in.	8 21 in.	252	..
(Z 12) Erich Giege (Z 13) Erich Koellner (Z 14) Friedrich Ihn (Z 15) Erich Steinbrück	Deschimag, Bremen	1935	374	37	9½	..	1625	40,000	36	5 5-in. 4 1½-in.	8 21 in.	252	..
(Z 16) Friedrich Eckoldt Z 17 Diether von Roeder	Blohm & Voss Hamburg	1935	374	37	9½	..	1625	40,000	36	5 5-in. 4 1½-in.	8 21 in.	252	..
Z 18 Hans Ludemann Z 19 Hermann Kunne Z 20 Karl Galster Z 21 Wilhelm Heidkamp Z 22 Anton Schmidt Z 23-30	Deschimag, Bremen	Bldg.	385½	38½	9½	..	1811	..	36	5-in.	8 21 in.	..	..
*Ittis *Wolf *Tiger *Luchs *Jaguar *Leopard *Secadler *Greif *Albatros *Kondor *Falke *Möwe	Projected ..	1927 1927	..	..	..	..	1811						
*G. 11 *G. 10 *G. 8 *G. 7	Wilhelms- haven	1928	304	28½	8½	2	800	25,000	34	3 4½-in. 2 1-pr. A.A.	6 19·7 in. (T.)	125	— 300
	Wilhelms- haven	1926 1926 1926 1926 1926 1926	287½	27½	9½	2	800	24,000	33	3 4½-in. 2 1-pr. A.A.	6 19·7 in. (T.)	120	— 300
	Germania Works, Kiel	1911 1912	233†	25	10	2	760	16,000	25	2 4½-in., 7 m.	2 19·7 in.	85	140 60
TORPEDO BOATS—													
T. 1-18	..	Bldg.	267	28½	6½	..	600	..	..	1 4½-in. 1 1½-in.	6 21 in.	..	..
T. 19-30	..	Proj'd.	..	..	..	..	600						
T. 196 Klaus von Bevern (ex-T. 190)	Vulcan Works, Stettin	1911 1910	243	26	10	2	800	18,000	26	2 4½-in., 2 m.	2 19·7 in.	87	— 200
SUBMARINES—													
U 1-6, 13-16	Deutsche Werke, Kiel	1935	136½	13	12½	2	250	700	13 7	1 1-pr.	3 21 in.	23	..
U 7-12, 17-24	Germania Werft, Kiel	1936	232½	20½	13½	..	712	..	18 8	1 4-in. 1 1-pr.	6 21 in.	40	..
U 25-26	Deschimag, Bremen	1936	206½	19	13	..	500	..	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	36	..
U 27-32	Deschimag, Bremen	1936	246	20·6	13·5	2	740	3200	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 33-36	Germania Werft, Kiel	1936	213	19·7	13·1	2	517	2100	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..
U 37-44	Deschimag, Bremen	1939	136·5	13	12·5	2	250	700	13 7	1 1-pr.	3 21 in.	23	..
U 45-55	Krupp Germania	1939	246	20·6	13·5	2	740	3200	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 56-63	Deutsche Werke, Kiel	1939	213	19·7	13·1	2	517	2100	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..
U 64-68	Deschimag, Bremen	1939	246	20·6	13·5	2	740	3200	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 69-71	Krupp Germania	1939	213	19·7	13·1	2	517	2100	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..

* Classified as torpedo boats in German official lists.

† Length increased during alterations, 1929-30.

A large increase in the German Submarine Fleet is projected.

Greece.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.			
			Length. (Extreme.)	Beam.	Draught.								Coal Oil			
DESTROYERS—																
Hydra	Odero, Genoa	1931	Feet.	Feet.	Feet.		Tons.		Knots				Tons.			
Conduriotis			108·8	30·3	10·5	2	1230	30,000	40	4 4·7 in., 4	6	156	630			
Spetsai										2-pr. A.A.	21-in.					
Psara			314·8	30·3	11·3	2	1308			40 mines	(T.)					
Thyella																
Sphendoni	Yarrow ..	1906	220	20·6	9·0	2	305	6006	30	2 3-in.	2	70	80			
King George's I. .. .	Yarrow	1938	320	33	8·5	2	1350	34,000	36	1 2-pr.	18-in.	150	—			
Queen Olga																4 4·7-in.	21-in.
Niki	Stettin	1906	220	20·6	9·0	2	275	6000	30	2 3-in., 4	2	70	90			
Aspis	(Vulcan)														6-pr.	21-in.
*Aetos, *Leon, ...	Birkenhead	1911	293	27·7	9·6	2	1013	19,750	32	4 4-in.,	6	102	—			
*Panther, *Ierax																2 2-pr.	21-in.
										(Panther and Aetos, 40 mines)	(T.)		260			
TORPEDO BOATS—																
Aretheusa	Stettin (Vulcan)	1913	147·8	9	4	2	142	2400	25	2 6-pr.	3	18-in.	25			
Doris																
†Aigli																
†Alkyoni																
†Pergamos	Fiume	1914	178·4	18·8	5	2	237	5000	28½	1 11-pr.	2	25	21			
†Proussa																
†Kios																
†Kyzikos																
†Kydonia	Monfalcone										18-in.		31			
SUBMARINES—																
Katsolis	Schneiders,	1926	203½	17·7	12·3	2	Surf. 567	Surf. 1300	Surf. 14	1 4-in., 1	6	30	..			
Papanicolis	Harfleur, Ch. de la Loire, Nantes						Sub. 760	Sub. 1000	Sub. 9·5	2-pr. A.A.	21-in.					
Nereus	Ch. de la Loire,	1927	226½	18½	12·6	2	689	1500	14	1 4-in., 1	8	42	..			
Proteus	Nantes	1927								945	1200			9·5	2-pr. A.A.	21-in.
Triton	Ch. de France, Caen	1928														
Glaukos		1928														

* Reconstructed by Messrs. J. S. White & Co., Cowes, 1924-25. † On sale list. ‡ Surrendered Austrian torpedo-boats employed on police duties. 2 destroyers and 2 submarines are projected.

Italy.

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Beam.	Draught.								Coal Oil	
														Tons.
FLOTILLA LEADERS—			Feet.	Feet.	Feet.		Tons.		Knots					
U. Vivaldi	Genoa	1929	353	33·6	10·5	2	1628	50,000	38	6 4·7-in. (in pairs) 4 1·5-in. A.A. Carry mines	6	125	600	
A. Usodimare ..	(Odero)	1929												
L. Tarigo	Genoa	1928												
L. Malocello ..	(Ansaldo)	1929												
L. Pancaldo ..	Riva Trigoso	1929												
A. Da Noli	(Cant. Navali)	1929												
E. Pesagno	Ancona	1929												
N. Da Reco	(Cant. Navali)	1929												
N. Zeno		1928												
G. Da Verazzano		1928												
A. da Mosto ..	Fiume ..	1929												
A. Pigafetta ..		1929												
Leone		1923	372	34	8·8	2	1825	42,000	34	8 4·7-in. (in pairs), 2 3-in. A.A., 60 mines.	6	18-in. (T.)	210	350
Pantera	Ansaldo ..	1924												
Tigere		1924												
Aquila	Pattison ..	1916	310	31	9·2	2	1407	39,800	36·5	4 4·7-in. (in pairs), 2 3-in. A.A., 50 mines	4	18-in. (D.)	140	260
Falco	Pattison ..	1916					1285							
Premuda		1918	353	34	9·3	2	1526	48,000	36	4 5·9 in., 2 2-pr. A.A.	4	19·7-in. (D.)	150	720
Augusto Riboty	Ansaldo ..	(1915)	340	32	9·8	2	1382	35,000	35	8 4-in., 4	4	18-in. (D.)	150	344
Carlo Mirabello		(1914)								2-pr. A.A., 100 mines.				
DESTROYERS—														
Camicia Nera ..	Odero-Terni Orlando	1938	350	33·4	10·9	2	1420	48,000	39	4 4·7-in. 4 1·5-in. A.A.	6	21-in.	..	..
Ascaro														
Corazziere														
Geniere														
Aviere														
Artigliere														

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes	Complement.	Fuel. Coal Oil
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS—Contd.													
Carabiniere	Cartieri Dell'	1938	350	33-4	10-9	2	1620	48,000	39	4 4-7-in.	6	..	..
Lanciere	Tirreno Riva Trigoso									4 1-5-in. A.A.	21-in.		
Granatiere	Cartieri	1938	350	33-4	10-9	2	1620	48,000	39	4 4-7-in.	6	..	..
Bersagliere	Navali Rivniti Palerino									4 1-5-in. A.A.	21-in.		
Fuciliere	Cartieri	1938	350	33-4	10-9	2	1620	48,000	39	4 4-7-in.	6	..	..
Alpino	Navali di Ancona									4 1-5-in. A.A.	21-in.		
*Libra	Cartiere	1937	267	26	7-9	2	679	19,000	34	3 3-9-in. 6 M.	4	..	..
*Lupo	Naval del	1937									18-in.		
*Iancie	Quarnaro Fiume	1937											
*Libra													
*Clio													
*Calliope	Ansaldo,	Bldg.	267	26	7-9	2	679	19,000	34	3 3-9-in. 6 M.	4	..	..
*Calliope	Genoa										18-in.		
*Clio													
*Alcione													
*Alcone													
*Ariel													
*Aritusa	Ansaldo,	1938	267	26	7-9	2	679	19,000	34	3 3-9-in. 6 M.	4	..	..
*Polluce	Genoa												
*Partenope													
*Plelade													
*Pallade	Naples	1937	267	26	7-9	2	679	19,000	34	3 3-9-in. 6 M.	4	..	..
L. Oriani													
V. Alfieri													
V. Gioberti	Orlando.	1936	343	33½	10	2	1498	48,000	39	4 4-7-in. 4 1-5-in. A.A. carry mines	6	157	..
Cr. Carducci													
Aldebaran													
Altair													
Andromeda	Ansaldo												
Antares													
*Canopo													
*Cassiopea													
*Castore	Ancona	1936	267	27	7-6	2	652	19,000	34	3 3-9-in. 6 1-5-in. A.A.	4	..	..
*Cigno													
*Sagittario	Fiume												
*Vega													
*Centauro													
*Climene	Ancona	1935	269	27	7-2	2	652	19,000	34	3 3-9-in. 6 1-5-in. A.A. guns	4	..	..
Sirio	Fiume	1935									18-in.		
Perseo													
Spica	Partenopel.	1934	264	27	7-5	2	638	19,000	34	3 3-9-in. 6 1-5-in. A.A.	..	..	..
Astora	Naples	1934											
Maestrale	Fiume	1934											
Grecale	Ancona	1934	350	33½	10	2	1449	44,000	38	4 4-7-in. 4 1-5-in. A.A.	6	156	..
Libeccio	Ancona	1934									21-in.		
Schrocco	Genoa	1934											
Dardo	Odero, Sestri	1930											
Strale	Posente												
Freccia	Cant. Navale di Tirreno,	1931	315	32	9-5	2	1206	44,000	38	4 4-7-in. 4 M. A.A. 21-5-in. A.A.	6 21-in. (T.)	156	— 225
Saetta	Sestri Levante	1932											
Folgore	Cartieri												
Lampo	Partenopel.												
Baleno	Naples	1931	315	30-5	10	2	1220	44,000	38	4 4-7 in. 4 M. A.A. 21-5-in. A.A.	6 21-in. (T.)	150	oil
Fulmine	Quarnaro Yard, Fiume												
Borea		1927											
Zeffiro	Ansaldo,	1927											
Espero	Genoa	1927					1073						
Ostro		1928	307½	30	9-5	2	35,000	36	36	4 4-7-in., 3 M., 52 mines	6 21-in. (T.)	140	— 340
Aquilone	Odero,	1927											
Turbine	Genoa	1927											
Nembo	Genoa	1927					1092						
Euro		1927											
N. Sauro	Docks Co.	1927											
C. Battisti	Odero	1926											
F. Nullo	Quarnaro,	1926	295½	30-2	9-5	2	1058	32,000	35	4 4-7-in., 32-pr. A.A. 3 M., 52 mines	6 21-in. (T.)	140	— 340
D. Manin	Fiume	1925											
Francesco Crispi		1925											
Giovanni Nicotera	Naples	1926	278-6	28-2	8-6	2	935	36,000	35	3 4-7-in., 22-pr. A.A. 2 M., 40 mines	2 dbl. 21-in. (D.)	106	— 200
Bettino Ricasoli	(Pattison)	1926											
Quintino Sella		1925											
Alessandro Poerio	Genoa												
Giulio Pepe	(Ansaldo)	1914	279	26-3	8-0	2	844	20,000	32	5 4-in., 2 2-pr. A.A. 4 10 mines	4 18-in. (D.)	100	— 280
Insidioso	Naples (Pattison)	1913	239½	24-0	8-4	2	540	13,500	30	5 4-in. 10 mines	4 18-in. (D.)	71	— 110

* Designated torpedo boats in Italian official lists.

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
DESTROYERS—contd.														
*Giuseppe Sirtori ..	Genoa (Odero)	1916	237½	24	9·0	2	669	15,000	32-33·8	{ 6 4-in., 2 2-pr. A.A. 2 M.	4 18-in. (D.)	100	— 150	—
*Vincenzo Orsini ..		1917												
*Francesco Stocco ..		1916												
*Giovanni Acerbi ..		1916												
E. Coens ..		1918												
Giacomo Medici ..		1917												
G. La Farina ..		1918												
Nicola Fabrizi ..		1917	237½	24	7·9	2	635	15,500	31-34	{ 4 4-in., 2 3-in., 2 M. 10 mines.	4 18-in. (D.)	100	— 150	—
Angelo Bassini ..		1917												
Giacinto Carini ..		1917												
G. La Masa ..		1917												
Fratelli Cevoli ..	Naples (Pattison)	1914	239	24	8·8	2	615	14,500	30	{ 5 4-in., 2 2-pr. A.A. 2 M.	4 18-in. (D.)	71	— 150	—
Antonio Mosto ..														
Giuseppe Abba ..														
Rosalino Pilo ..														
Cesare Rosarol, ex-German B97 ..	Hamburg	1915	321½	30·6	6·5	2	744	30,000	32½	{ 3 4·7-in., 2 3-in. A.A. 24 mines	4 19·7-in. (D.)	114	— 526	—
*Simone Schiavino ..	Genoa (Odero)	1914	236	24	8·8	2	615	13,500	30	{ 5 4-in., 2 2-pr. A.A. 2 M.	4 18-in. (D.)	71	— 150	—
*Giuseppe Iezza ..		1914												
*Giuseppe Messori ..		1915												
*Gen. A. Cantore ..		1921	241½	24	7·9	2	635	18,000	30	{ 3 4-in., 2 3-in. A.A. 2 M.	4 18-in. (D.)	100	— 150	—
*Gen. A. Chinotto ..														
*Gen. A. Papa ..														
*Gen. A. Cascino ..	1922													
*Gen. M. Prestinari ..														
*Gen. C. Montanari ..														
Audace (ex-Japanese Kawakaze) ..	Yarrow	1917	287	27·5	8·8	2	628	21,500	34·5	{ 7 4-in., 2 M.	{ 4 18-in. (D.)	111	— 252	—
Andimontoso, ex-German S. 63 ..	Schichau	1915	272	27·3	7·5	2	803	18,000	25	{ 3 4-in., 2 1·6-in., 24 mines	4 19·7-in. (D.)	98	— 305	—
Solferino, Palestro S. Martino, Curtatone Confienza, Castelfi- dardo, Calatalfimi, Mouzambano ..	{ Leghorn (Orlando)	{ 1921 1922 1923	{ 269 283½	26·5	8·6	2	{ 860 966	22,000	32- 33·5	{ 4 4-in., 2 3-in. A.A., 2 M., 24 mines	4 18-in. (D.)	115	— 170	—
TORPEDO BOATS—														
Cortellazzo ..	{ Danubius ex-Austrian	1917	274	25·5	8·2	2	561	22,000	32	{ 2 3·9-in., 6 smaller	{ 4 18-in. (D.)	102	110 140	—
Monfalcone ..														
†Albatross ..	Orlando	1934	231½	22½	6	2	340	4,000	24·5	2 3·9 in.	2	..	..	..
Insidioso ..	Pattison	1914	..	..	..	2	542	15,000	30	4 1·5-in. A.A. 5 4-in.	4 17·7-in. (D.)	71	— 130	—
SUBMARINES—														
Saint Bon ..	Monfalcone	Bldg.	285	25·5	17·2	2	1461	4600	18 8·9	2 4-in., 4 M. A.A.	14 18-in.	..	..	..
Cagni ..														
Millo ..														
Caracciolo ..														
M. Bianchi ..														
L. Torelli ..	La Spezia	Bldg.	247	22·5	15·5	2	1036	3600	18 8·5	2 4-in., 4 M. A.A.	8 21-in.	..	..	..
A. Malauspina ..														
M. F. Baracca ..														
G. Marconi ..														
L. da Vinci ..														
A. Bagnolini ..	Taranto	Bldg.	250	23	13·8	2	1030	3500	18 8·5	2 4-in., 4 M. A.A.	8 21-in.	..	..	..
R. Tarantini ..														
Luzzi ..														
R. Giuliani ..														
Nani ..														
Marcello ..	Adriatico	{ 1937 1938 1938 1938 1938	{ 239½	23·5	15·5	2	941	3,000	17 8·5	2 3·9-in. 2 M. A.A.	8 21-in.	..	..	..
Barbarigo ..														
Veniero ..														
Provana ..														
Dandolo ..														
Morosini ..	Tosi	{ 1937 1937 1938 1938 1937	{ 231·4	22½	13½	2	896	3,000	17 8·5	1 4·7-in. 4 A.A.	8 21-in.	..	..	..
Mocenigo ..														
Emo ..														
Brin ..														
Galvani ..														
Guglielmotti ..														

* Designated torpedo boats in Italian official lists.

† Submarine chaser.

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
SUBMARINES—contd.													
Adua	Adriatico ..	1936	197	21	14'4	2	620 844	1350 800	14 8'5	1 3'9-in. 2 m.	6 21-in.	40	..
Alagi													
Aradam	Orlando ..												
Ascianghi	Adriatico ..												
Axum	Tosi ..												
Dagabue	Orlando ..												
Dessie	Tosi ..												
Gondor	Orlando ..												
Macalle	Tosi ..												
Neghelli	Orlando ..												
Uebi-Scebell	Adriatico ..	1936	206	22'6	10'5	2	676 901	1350 800	14 8	1 3'9-in. 2 m.g.	6 21-in.	40	..
Uarsheich	Tosi ..												
Scire	Orlando ..												
Tembien	Adriatico ..												
Durbo	Tosi ..												
Lafio	Orlando ..												
Beul	Adriatico ..												
Argo	Tosi ..												
Vellela	Orlando ..												
Perla	Adriatico ..												
Diaspro	Tosi ..	1936	197	21	14'4	2	620 844	1350 800	14 8'5	1 3'9-in. 2 m.	6 21-in.	40	..
Gemma	Orlando ..												
Berillo	Adriatico ..												
Turchese	Tosi ..												
Corallo	Orlando ..												
Malachite	Adriatico ..												
Ambra	Tosi ..												
Iride	Orlando ..												
Onice	Adriatico ..												
Atropo †	Tosi ..												
Zoea †	Orlando ..	1937	266½	23½	12½	2	1109 —	2880 —	17 8	1 3'9-in. 2 m.g.	6 21-in.	60	..
Foca †	Adriatico ..												
Calvi †	Tosi ..												
Finzi †	Orlando ..												
Tazzoli	Adriatico ..												
Diamante	Tosi ..												
Smeraldo	Orlando ..												
Rubino & Topasio	Adriatico ..												
Zaffiro & Amestista	Tosi ..												
Sirena, Naiade, Nerelde, Anfritre, Galatea, Ondina	Orlando ..												
Archimede, Galileo, Torricelli, Ferraris	Monfalcone	1933	197	21	12	2	590 787	1,350 800	14 8'4	1 3'9-in. 2 m.	6 21-in.	..	..
Glaucio †	Taranto ..												
Otaria †	Monfalcone												
Pietro Micca †	Taranto ..												
Squalo, Narvalo, Delfino, Tricheco	Orlando ..												
Argonauta, Fisalia, & Medusa	Adriatico ..												
Jalea & Jantina	Tosi ..												
Serpente (ex-Nautilus) & Salpa	Orlando ..												
Santorre Santarosa	Adriatico ..												
Ciro Menotti	Monfalcone												
Fratelli Bandiera	Taranto ..	1930	229	19	14'5	2	815 1078 797 1134	3,000 1,360 3,000 1,400	17'5 17'0 15'5 15'5	1 4-in. 2 m.	8 21-in.	50	..
Luciano Manara	Adriatico ..												
Luigi Settembrini	Tosi ..												
Ruggiero Settimo	Orlando ..												
E. Fieramosca	Adriatico ..												
M. Bragadino	Taranto ..												
F. Corridoni	Adriatico ..												
Ballila	Orlando ..												
A. Sciesa	Adriatico ..												
E. Toti	Tosi ..												
D. Millelire	Orlando ..	1927	287	25'6	13'5	2	1368 1874	4,400 2,200	18'5 9	1 3'9-in. 4 m. 16 mines	6 21-in.	66	140
V. Pisani	Adriatico ..												
M. Colonna	Tosi ..												
Da. Geneys	Orlando ..												
G. Bausan	Adriatico ..												
G. Mameli	Tosi ..												
P. Capponi	Orlando ..												
T. Sperti	Adriatico ..												
G. Da. Procida	Taranto ..												
X 2, 3	Orlando ..												
H 1, 2, 4, 6, 8	Vickers ..	1917	150'3	15'8	12	2	336 466	620 480	13 10	1 3-in. A.A. 1 m., H1, 4, and 6 only	4 18-in.	22	18

† Minelayers.

About 14 submarines projected.

Japan.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.					Tons.
DESTROYERS:														
FIRST CLASS—														
Arashio	Kawasaki ..	1937-1938	356	33	9	2	1500	38,000	34	6 5-in.	8 24-in.	200	..	..
Oshio	Maizuru ..													
Mitsushio	Fujinagata ..													
Asagumo	Kawasaki ..													
Minegumo	Fujinagata ..													
Kasumi	Uraga													
Yamagumo	Fujinagata ..													
Natsagumo	Sasebo													
Asashio	Maizuru ..													
Arare	Maizuru ..													
Kagero	Maizuru ..	1935-1936	336	31·8	9·1	2	1368	37,000	34	5 5-in. 2 M.G.	8 21-in.	200	— 400	
Shiranuhi	Uraga													
3 others	—													
Yudachi	Sasebo													
Harusame	Maizuru ..													
Samidare	Uraga													
Umikaze	Maizuru ..													
Yamakaze	Uraga													
Kawakaze	Sasebo													
Suzukaze	Uraga													
Murasame	Sasebo	1933-1934	338	32·7	8·8	2	1368	37,000	34	5 5-in. guns	9	200	— 400	
Shigure	Uraga													
Shiratsuyu	Sasebo													
Hatsushima	Uraga													
Ariake	Kawasaki ..													
Yugure	Maizuru ..													
Wakaba	Sasebo													
Nenohi	Uraga													
Hatsuhara	Sasebo													
Oboro	Sasebo													
Akebono	Fujinagata ..	1929-1932	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	9 21-in.	200	— 420	
Sazanami	Maizuru ..													
Ushio	Uraga													
Akatsuki	Sasebo													
Hibiki	Maizuru ..													
Ikazuchi	Uraga													
Inazuma	Fujinagata ..													
Sagiri	Uraga													
Asagiri	Sasebo													
Yugiri	Maizuru ..													
Amagiri	Tokyo	1927-1928	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	9 21-in.	197	— 420	
Shikidami	Maizuru ..													
Ayanami	Fujinagata ..													
Fubuki	Maizuru ..													
Shirayuki	Yokosuka ..													
Hatsuyuki	Maizuru ..													
Murakumo	Fujinagata ..													
Shinonome	Sasebo													
Usugumo	Ishikawa-ima (Tokyo)													
Shirakumo	Fujinagata ..													
Isonami	Uraga	1926-1928	320 b.p.	30	9·8	2	1315	38,500	34	{ 4 4·7-in., 2 M. A.A. }	6 21-in.	148	— 400	
Uranami	Sasebo													
Minadzuki	Uraga													
Fumitsuki	Fujinagata ..													
Nagatsuki	Ishikawa-ima ..													
Kikudzuki	Maizuru ..													
Mikadzuki	Sasebo													
Mochidzuki	Uraga													
Yudzuki	Fujinagata ..													
Yayoi	Uraga													
Udzuki	Ishikawa-ima ..	1922-24	320 b.p.	30	9·6	2	1270	38,500	34	{ 4 4·7-in., 2 M. A.A. }	6 21-in.	148	— 400	
Mutsuki	Sasebo													
Kisaragi	Maizuru ..													
Satsuki	Fujinagata ..													
Oite	Uraga													
Hayate	Ishikawa-ima ..													
Yunagi	Sasebo													
Kamikaze	Nagasaki ..													
Asakaze	Maizuru ..													
Harukaze	Maizuru ..													
Matsukaze	Maizuru ..	1924												
Hatakaze	Maizuru ..													
Asanagi	Fujinagata ..													

Japan—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.												
			Length (extreme).	Beam.	Draught.								Coal Oil												
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.												
DESTROYERS—contd.																									
FIRST CLASS—contd.																									
Sawakase	Nagasaki .. Maidzuru .. Mitsubishi, Kawasaki, Maidzuru	1919-22	320 b p.	29.25	9.5	2	1215	38,500	34	{ 4 4.7-in., 2 M. A.A. }	6 21-in.	149	— 400												
Okikase, Shimakase, Nadakase, Yukase, Hakase, Minekase Namikase, Numakase, Nokase, Tashikase, Shiokase, Hokase, Yakase, Akikase																									
SECOND CLASS—																									
Wakatsake		Kawasaki, Kobe												1922	275 b.p.	26.5	8.3	2	820	21,500	31.5	{ 3 4.7-in., 2 M. A.A. }	4 21-in.	110	— 250
Kuretake																									
Fuyo		Fujinagata ..												1922, 23											
Karukaya																									
Asagao	Ishikawa- jima	1922-23 1923																							
Yugao																									
Sanaye	Uraga	1916-18	275.0 b.p.	25.3	7.9	2	755	16,000	31.5	{ 3 4.7 in., 2 M. }	6 18-in.	109	92 212												
Yanagi, Momo ..																									
Hinoki	Sasebo	1917-19																							
Kaya																									
Nashi, Kaki, Take	Maidzuru ..	1917-19																							
Kuri																									
Nire, Tsuga	Yokosuka ..	1917-19	275.5 b.p.	26	8	2	770	21,500	31.5	{ 3 4.7 in., 2 M. A.A. }	4 21-in.	80	— 290												
Hagi																									
Susuki, Yomogi ..	Kure	1920- 1922																							
Sumire																									
Hishi, Hase	Ishikawa- jima	1920- 1922																							
Tade, Fuji																									
Aoi, Kiku	Uraga	1920- 1922																							
Tsuta, Ashi, .. .																									
TORPEDO BOATS—																									
Chidori	Maizuru	1933	254	24	6	2	527	7000	26	3 4.7 in.	2 21-in.	..	..												
Manazuru																									
Tomazuru	Fujinagata ..	1933																							
Hatsukari																									
†Kawasemi	Fujinagata ..	1908																							
Otari																									
Hyodori	Kawasaki	1908																							
Hayabusa																									
Kasasagi	Maizuru	1935	263	26	6½	2	595	9000	28	3 4.7-in. 1 M.G.	3 21 in.	..	..												
Kari																									
Sagi	Yokohama ..	1935																							
Hato																									
Kiji	Mitsubishi ..	1936																							
Further eight in No. building.																									
SUBMARINES—																									
I68	Kure	1933	331	27	13	2	Surf. Sub. 1400	6000	20	1 4.7-in.	6 21-in.	60	..												
I69																									
I70	Kobe	1934																							
I71																									
I72 and I73	Sasebo	1935																							
I74 and I75																									
I9-I24	Kawasaki	1935	344	29.9	14.4	2	1500 1950 2500 1900 2500	6000 6000 1800 6000 1800	17 9 17 17 9	2 5.5-in.	4 21-in.	60	..												
I8																									
I7	Kure	1934																							
I6																									
I5	Kawasaki	1934																							
I4																									

* Capsized in 1934 but has been repaired and put into commission again.

† ex-Chinese Hu Ngo.

Japan—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes	Complement.	Fuel Coal Oil
			Length (extreme).	Beam.	Draught.								
SUBMARINES—contd.													
165	Kure	1931	321	26·9	15·9	2	1638	6000	19	1 4-in. 1 M.	6	70	..
166	Sasebo						2100	1800	9				
167	Kobe	1929	320½	25·7	16	2	1635	6000	21	1 4·7-in.	6	56	—
161	Mitsubishi ..						2100	1800	7·9				
162	Kobe	1929	320	30·2	15·7	2	1955	6800	17	{ 2 5·5-in. } { 1 M. }	6	61	—
164	Kure						2480	1800	9				
14	Kawasaki ..	1929	279½	24·6	14	2	1142	2400	14	1 5·5-in.	4	45	..
11, 12, 13 ..	Kawasaki ..	1926					1470	1200	9·5				
+121	Kawasaki ..	1928											
+122		1928											
+123	Kure	1928											
+124		1928											
163	Kure	1927	331½	26	16	2	1635	6000	21	1 4·7-in.	8	56	—
165	Kure	1927					2100	1800	7·9				
166	Kure	1929											
164	Sasebo	1927											
163	Sasebo	1928	250	24·2	12·4	2	988	2400	16	1 3·15-in. A.A., 1 M.	6	47	75
160	Sasebo	1929					1300	1800	10				
159	Yokosuka ..	1929	250	23·5	13	2	889	2400	17	1 3·15-in. 1 3-pr.	4	65	76
158	Yokosuka ..	1928					1082	1200	10·5				
157	Kure	1929											
Ro. 33	Kure	1934	239½	22	10·5	2	700	1200	16	1 3·15-in. A.A.	4	..	..
Ro. 34	Mitsubishi ..	1935					1000	1200	10				
Ro. 31	Mitsubishi ..	1927	243½	20	12·4	2	655	1200	13	1 3·15-in. A.A.	4	43	75
Ro. 65	Mitsubishi ..	1926	250	24·2	12·4	2	988	2400	16				
Ro. 66	Mitsubishi ..	1927					1300	1800	10				
Ro. 67	Mitsubishi ..	1927	250	24·2	12·4	2	988	2400	16	1 3·15-in. A.A., 1 M.	6	47	75
Ro. 68	Mitsubishi ..	1927					1300	1800	10				
Ro. 64	Mitsubishi ..	1925	250	23·5	13	2	889	2400	17	1 3·15-in. 1 3-pr.	4	65	76
Ro. 63, 62, 61 ..	Mitsubishi ..	1925					1082	1200	10·5				
Ro. 60	Mitsubishi ..	1924	231·5	23·5	13	2	893	2400	17	1 3·15-in. H.A., 1 3-pr.	6	65	76
I 51 †	Kure	1923					1390	6000	19				
I 52		1925	330	25	16·8	2	2000	1800	7·9				
Ro. 32, 30	Kawasaki ..	1924	243·5	20	12·4	2	655	1200	13	1 4-in.	4	43	75
Ro. 28	Kawasaki ..	1923					1000	1200	10				
Ro. 27	Sasebo	1923	243·5	20·1	12	2	746	2600	16	1 3·15-in. 1 3-pr.	4	45	75
Ro. 26	Yokosuka ..	1924					1000	1200	10				
Ro. 57	Sasebo	1922	250	23·5	13	2	889	2400	17	1 3·15-in. 1 3-pr.	4	65	76
Ro. 58, 59	Kure	1923					1082	1200	10·5				
Ro. 56, 55	Yokosuka ..	1922	231·5	23·5	13	2	893	2400	17	1 3·15-in. H.A., 1 3-pr.	6	65	76
54, 53	Mitsubishi ..	1922					1082	1200	10·5				
51	Mitsubishi ..	1921											
51	Mitsubishi ..	1920											

† Fitted for minelaying.

‡ Carries small seaplane.

Netherlands.

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-power.	Maximum speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Breadth.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots				Tons	
DESTROYERS—														
*Banckert ..	Burgerhout	1929								4 4·7-in.,				
*Van Nes ..	Rotterdam	1930								1 3-in. A.A.,	6		—	
*Van Galen ..	Fijenoord	1928	321·5	31	9·8	2	1316	31,000	34	4 1-pr., 4 M.	21-in.	126	300	
*Witte de With	Rotterdam	1928								1 seaplane				
Van Ghent	Flushing	1926								24 mines				
*Evertsen ..	Rotterdam	1926	321·5	31	9·8	2	1316	31,000	34	4 4·7-in.	6		—	
*Plot Hein ..		1927								2 3-in. A.A.	21-in.	126	300	
*Kortenaar		1927								24 mines 1 seaplane				
1ST CLASS TORPEDO BOATS—														
G 13, 15 and 16 ..	{Scheldt Fijenoord}	{1913- 1914}	{162·5	{17·3	{9·0	{1	{150	{2,600	{25	2 3-in.	8 17·7-in.	27	40	—
Z 3	Amsterdam	{1916- 1917}	{201	{20·4	{6	{2	{277	{5,500	{27	2 3-in., 2 M.	4 17·7-in.	48	61 8	
Z 5-8 ..	{Scheldt Fijenoord}	{1915	{192	{19·8	{5·5	{2	{264 Surf. Sub.	{5,500	{27	2 3-in., 2 M.	4 17·7-in.	48	70 7	
SUBMARINES—														
K XIV ..	Rotterdam	1932-3	242	21·5	12·5	2	770	3,200	17	1 3·5-in.,	8			
K XV ..							1,030	1,000	9	2 2-pr.	21-in.	35	..	
K XVI ..	Fijenoord	Bldg.	265	24·6	12·5	2	966	5,000	17	1 3·5-in.,	8			
K XVII ..							1,020	—	9	2 1·5-in.	21-in.	36	..	
K XVIII ..	Rotterdam	Bldg.												
O XIX ..														
O XX ..														
O XXI ..	De Schelde	Bldg.												
O XXII ..														
O XXIII ..	Rotterdam	Bldg.	254½	25½	13	2	888	5,000	20	1 3·5-in.	8			
O XXIV ..							1,205	—	9	2 1·5-in.	21-in.	37	..	
O XXV ..	Rotterdam	Bldg.												
O XXVI ..														
O XXVII ..	Wilton Fijenoord	Bldg.												
O 12 ..	De Schelde	1931	199	18·7	11·5	2	560	1,900	15	2 1·5-in. A.A.	5			
O 13 ..							700	600	8		21-in.	31	..	
O 14 ..														
O 15 ..														
O 16 ..	De Schelde	1936	251	21·5	13	2	878 1190	3,200 800	18 9	1 3·5-in. 2 1·5-in.	5 21-in.	35	..	
†K XIII ..	Fijenoord	1924	218·8	20·2	12·2	2	660	2,400	15	1 3·5-in.	6			
†K XII ..							810	725	8	1 maxim	17·7-in.	31	45	
†K XI ..	Fijenoord	1925	179½	18·7	11½	2	506	900	12½	1 22-pr. A.A.,	5			
O 11 ..							627	—	9	1 maxim	21-in.	29	—	
O 10 ..	Amsterdam													
O 9 ..	Flushing													
O 8 ..														
(ex-British H6)	..	1914	150·3	15·8	12·3	2	364 434	480 320	13 8·5	1 maxim	4 17·7-in.	26	—	18
								1,550 630						
†K X ..	De Schelde	1923	210	18·3	11·9	2	560	1,550	15	1 3·5-in.	4			
†K IX ..		1922					690	630	8	1 maxim	17·7-in.	31	—	45
†K VIII ..		1922						1,800 630						
†K VII ..	Fijenoord	1921	177·2	16·8	12·5	2	550 630	1,200 600	15 8	1 3-in., 1 maxim	6 17·7-in.	31	—	76

* Dutch East Indian Fleet.

† Indian Military Marine.

Norway.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme)	Beam.	Draught.								Coal	Oil
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
2 Destroyers	Horten ..	Bldg.	319	32·9	8·9	2	1220	30,000	34	4 4·7-in. 2 1·57-in.	4 21 -in.	120	..	
Tjerk Hiddes	Flushing	Bldg.	318·8	33·8	10·2	2	1628	45,000	36	5 4·7-in. 4 1·57-in. 4 m.g. 2 aircraft	8 21 -in.	155	..	
Gerad Callenbury ..	Rotterdam													
Isaac Sweers														
Philip van Almonde														
4 others														
Draug, Troll, Garm	Horten ..	1908-13	226	23·5	8·5	2	540	7,500 (Garm 8,000)	27·0	6 3-in. Draug has 6 4·7-in. in addition	3 18 -in.	71	95 6	
TORPEDO BOATS:														
FIRST CLASS—														
Snogg, Stegg, Trygg	Horten ..	1919	173·9	18	5·4	2	250	3,500	25	2 3-in.	4 18 -in.	31	30	
Storm, Brand ..	Horten ..	1920	130·9	16·0	6·9	1	100	1,100	21	2 m.	2 18 -in.	19	17	
Laks, Sild, Sael, Skrei	Horten ..	1900	126·4	15·0	6·9	1	100	1,150	21·8	2 m.	2 18 -in.	19	—	
Sleipner, Aegir ..	Horten ..	1936	256·3	25·5	6·9	2	625	12,500	30	3 4-in., 1 1·5-in. A.A.	4 21 -in.	72	—	100
Gyller	Fredrikstad	Bldg.												
Odin, Balder, Tor ..														
SECOND CLASS—														
* {Kjek, Hvas, Kvik,}	Fredrikstad	1898	1 4 5	14·5	6·0	1	73	650-750	19 20	2 m.	2 18 -in.	14	11	
* {Blink		1903											16	
Lyn, Hauk, Falk	Horten ..													
Skarv, Teist	Horten ..	1906-7	133	14·5	6·5	1	100	1,600	25	2 3-pr.	2 18 -in.	18	15	
Lom, Jo, Grib	Horten ..	1903	117	14·5	5·7	1	72	1,100	23	2 m.	2 18 -in.	16	15	
Ravn, Orn			113	14·5	5·7	1	73	850	23	2 m.			16	
Kjell	Horten ..	1912	125	14·9	6·4	1	100	1,800	25	2 3-pr.		19	15	
SUBMARINES—														
A 2, 3, 4	Germania	1909 to	133·2	15·7	8·9	2	246	900	14	—	3 18 -in.	17	—	
	Kiel	1913					352	380	7				12·8	
B 1, 2	Horten ..	1912	167·3	17·5	10·5	2	413	900	14·5	1 2-in.	4 18 -in.	23	—	
B 3, 4	Horten ..	1923-24					545	640	10				21	
B 5, 6	Horten ..	1929												

* Employed as patrol ships.

Soviet Union.

Some of the details given below are uncertain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Coal Oil
Tons.													
FLOTILLA LEADERS—													
Leningrad	..	1935	430	..	..	..	1950	..	..	5 5·1-in. 2 3-in. A.A.	21- in.	..	..
Kharkov	..	1936											
Minsk	..	1936											
Perekop	} Bldg.												
Stalingrad													
Moscow													
Kiev													
Volochevka	..												
DESTROYERS—													
Felix Dzerzhinski	} Ship & Eng. Co., Niko- laev	1917	303	29·5	10·5	2	1326	29,000	28	4 4-in., 2 7- pr., 4 M., can carry 80 mines (T.)	12 18- in. (T.)	120	— 390
Petrovski													
Nezamojni													
Shaumyan													
Karl Marx	} Revel.. ..	1915	344·5	31·3	9·7	2	1350	32,700	35	5 4-in., 1 3- in. A.A., carries mines	9 18- in. (T.)	120	— 400
Kalinin													
Karl Liebknecht	} Leningrad..	1914	321	31	9·25	2	1610	32,000	29	4 4-in., 1 3-in. A.A., 2 M., 80 mines	9 18- in. (T.)	110	— 400
Uritsky													
Volodarski		1915	315	31	10	2	1260	30,000	28			110	— 350
A. Zhdanov													
Engels													
Stalin	} Leningrad..	1915	315	31	10	2	1260	30,000	28	4 4-in., 1 3-in. A.A., 2 M., 80 mines	9 18- in. (T.)	110	— 350
Artem													
Volkov													
Lenin													
Frunze													
.. ..	Leningrad..	1914	336	31·1	9·8	2	1100	23,000	34	4 4-in., 1 3- in., 4 M. (D.)	6 (D.)	120	— 350
Shtorm	..	1932	236	24	10	2	700	13,200	29	{ 2 4-ins., 3 3-in., 2 M. 40 mines.	9 18- in.	72	..
Shkval	..												
Groza, Metall, Smertsch, Taifun, Uragan, Wiche, Winga, Zykion, Grom, Vikur	..	1933-35	236	24	10	2	700	13,200	29	2 4-in., 3 3-in., 2 M. 40 mines	9 18- in.	72	..
GUARD SHIPS—													
Oserchinski	..	1934	250	27	..	3	800	5,400	20	{ 2 4-in., 4 1·5-in.	..	..	..
Kirov	..												
SUBMARINES—													
Chartist	..	1930	..	..	..	..	1639	..	..	1 4-in., 1	6	..	..
Garibaldiets	..	1933					1335	..	..	M.G.	21- in.		
Karbonari	..	1931	..	..	..	..	869	2500	15	1 4-in., 1	8	44	78
Dekabrist	..												
Narodovoleets	..	Bldg.	240	23	13½	..	1318	1200	8	1·5 in., 1 M	21- in.	..	..
Krasnogvardeets	..												
L 1-3	..	1931	..	..	..	..	200	..	..	1 1·5-in.	2	..	..
Komsomolka	..												
Jacobinets	..	Bldg.	200	..	..	..	500	..	..	1 1·5-in.	6	..	..
Revolusioner	..						800	..	..	..	..	..	..
Spartakovets	..	Bldg.	..	..	..	..	1200	..	..	2 4-in., 2 M.	8	..	..
5 others	..						1800	..	..	..	..	..	..
35 in number Type M	..	Bldg.	..	..	..	..	200	..	..	1 1·5-in.	2	..	..
30 in number Type Schtsch	..	1935-1937	200	..	..	..	500	..	..	1 1·5-in.	6	..	..
10 in number Pravda	..	Bldg.	..	..	..	..	800	..	..	..	..	..	..
Iskra	..						1936	..	..	..	1200	..	..
Zvezda	..						1800	..	..	..	..	..	..
Bolshevik	} St. Petersburg	1916-1917	223	14½	12·6	..	650	2400	16	2 6-pr., 1	4	33	— 40
Komissar							790	900	9	M.G.	18- in.		
Kommunar							..	..	..	..	..		
Tovarisnch							..	..	..	..	..		
Krasnoarmets							..	..	..	..	..		
Krasnoflots							..	..	..	..	..		
Bednyak							..	..	..	..	..		
Proletarii							..	..	..	..	..		
Batrak							..	..	..	..	..		
Rabochi							..	..	..	..	..		
Metallist							..	..	..	..	..		
Kommunist	..	1918-1922	150	15½	15½	..	375	480	13	1 6-pr., 1	4	28	— 17
Marxist	..						467	320	11	M.G.	18- in.		
Politrabotrik	..						..	..	..	..	..	40	— 78
L55 (ex-British)	..	1917	230	24	13	2	870	2400	17	1 4-in., 1	6		
							1139	1600	10	M.G.	21- in.		

There are about thirty-five destroyers and torpedo-boats completed from 1895 to 1912 of very little if any fighting value. Many of the above vessels are known to be practically useless until very extensively repaired and refitted.

Spain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel	
			Length. (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.	
FLOTILLA LEADERS—														
Gravina	Cartagena ..	1934	333	31·7	10·5	2	1536	42,000	36	{ 5 4·7-in. 13-in. A.A. 4 M.	{ 6 21-in. (T.)	176	—	540
Escudo		1930												
Ciscar		1930												
Jorge Juan		1931												
Ulloa		1929												
Almirante Valdés..		1930												
" Antequera ..		1930												
" Miranda		1928												
Churrucá		1928												
Alcala Gallano ..		1928												
Lepanto		1926												
José Luis Díez ..		Bldg.												
Sanchez-Barcaiztegui		Bldg.												
Alava														
Lintiers														
DESTROYERS—														
Alsido	Cartagena ..	{ 1922	283	27	9	2	1045	33,000	34	{ 3 4-in., 2 2-pr. A.A.	{ 4 21-in. (D.)	70	—	265
Velasco Celta ..		1923												
Juan Lazaga		1924												
Velasco Melilla ..		1924												
TORPEDO BOATS—														
11 boats	Cartagena ..	{ 1913- 1922	{ 164	{ 16·5	{ 6½	{ 3	{ 187	{ 3750	{ 26	{ 3 3-pr.	{ 3 18-in.	{ 31	{ 33	{ —
SUBMARINES—														
D1	Cartagena ..	{ 1934	276	21·8	13	2	1050	5000	20·5	1 4·7-in.,	6			
D2 & D3		{ 1935					1375	1350	9·5	4 M.	21-in.	..	..	
C 3-6	Cartagena ..	{ 1928	247	20·8	13·5	2	900	2000	16	1 3-in. A.A.	6			
Isaac Peral (ex-C 1)		{ -1929					1270	750	8·5		21-in	40	..	
B 1, 2 and 5	Cartagena ..	1921-24	210	18·9	11·25	2	560 830	1400 850	16 10·5	1 3-in. A.A.	4 18-in.	28	—	66
Mola	Taranto	1934	231·5	22·5	13	2	880	3000	17	2 3·9-in.	8			
San Jurjo							1230	1300	8·5	2 M.G.	21-in.	..	..	

A number of submarines are projected.

Sweden.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Beam.	Draught.								Coal	Oil
DESTROYERS—														
			Feet.	Feet.	Feet.		Tons.		Knots.					Tons.
Göteborg	Gothenburg	1935	304	29·6	12½	2	1030	32,000	39	{ 3 4·7-in., 4 1-in.	6 21-in.	120	—	150
Stockholm	Karlskrona	1936												
Klas Horn	Malmö	1931	304·2	29·2	10·5	2	1000	24,000– 26,000	35	{ 3 4·7-in., 2 2-prs. A.A., 2 M.	2 trpl. 21-in.	125	—	150
Klas Uggla	Karlskrona													
Ehrensköld	Göteborg													
Nordenskjöld	Malmö													
Wale	Malmö	1906	216	20·8	9	2	354	8,000	30	2 3-in., 4 6-prs.	4 18-in.	69	80	—
Ragnar †	Malmö	1909	216	20·8	9	2	354	{ 8,000– 9,000	30·0	{ 4 3-in., 2 M.	{ 4 18-in. 21-in. (D.) 6	67	80	3
Sigurd	Gothenburg	1909												
Vidar	Malmö	1909												
Hugin	Gothenburg	1909												
Munin	Malmö	1910												
Wrangel †	Gothenburg	1917	232·8	22	9·2	2	458	11,000	34·0	4 3-in., 2 M.	18-in.	72	107	6
Wachtmeister ..	Gothenburg													
Malmö	Gothenburg	1938	304	29½	12½	..	1030	32,000	39	3 4·7 in.	6 21-in.	..	..	..
Karlskrona	Karlskrona													
TORPEDO-BOATS—														
1st Class—														
Castor †, Pollux † ..	{ Normand & Karlskrona	1908	128	14·5	8·5	1	103	2,000	25	2 6-prs. (except Castor and Pollux which have 2 1-prs.)	2 18-in. (†)	18	20	—
Vega †	Karlskrona ..	1910												
Vesta †	Karlskrona ..	1910												
Spica, Astrea, Iris, Thetis	{ Bergsund and Gothenburg	1909												
Altair †	Stockholm ..	1908												
Antares †	Stockholm ..	1908												
Argo †	Stockholm ..	1908												
Arcturus †	Bergsund ..	1910												
Persens, Polaris ..	Stockholm ..	1915												
Regulus, Rigel ..	Stockholm ..	1915												
2nd Class—														
5, 6, 7, 8, 9	Thornycroft	1906– 1908	106	12½	6½	1	50	750	20	1 1·5-in.	2 18-in.	14	22	—
SUBMARINES—														
1st Class—														
Ulven	Naval Yard,	{ 1930 1926 1928	213	21	10·8	..	700	2,800	16	1 4-in., 1 M.	4	32	—	40
Draken	Karlskrona						850	—	9		20-in.			
Gripen	Karlskrona						500	2,800	15		4			
Bavern	Naval Yard,	{ 1921 1921 1921	185	18·5	9·2	..	650	—	9	1 3-in., 1 M.	18-in.	..	33	—
Illern	Karlskrona						650	—	9		4			
Uttern	Karlskrona						650	—	9		18-in.			
Sälen	Kockum Co.,	{ 1920 1920 1920	171	16·5	11·5	..	450	2,800	..	1 3-in., 1 M.	18-in.	..	—	23
Valrossen	Malmö ..						580	—	..		4			
Hajen	Malmö ..						580	—	..		18-in.			
Mine-laying Sub.—														
Valen	Karlskrona	1925	186	23·2	9·4	..	492	..	15	1 3-in., 1 M.	4	..	—	34
							650	..	9		18-in.			
Nordkaparen	Kockum ..	1935	199	20½	11	..	500	..	15	1 4-in.	4	28	..	..
Delfinen							720	..	10		21-in.			
Springaren		1936	204	20½	11	2	620	..	15	1 4·1-in., 2 M.G.	4	32	..	..
Sjölejonet							—	..	10		21-in.			
Sjöbjörnen	Kockum ..	1938	204	20½	11	2	620	..	15	1 4·1-in., 2 M.G.	4	32	..	..
Sjöhunden							—	..	10		21-in.			

† Fitted for mine-laying.

Also two motor torpedo-boats, Nos. 3 and 4, 11 tons, 41 knots, 1 M.G. 2 18-in. torpedo tubes.

‡ Torpedo-boats marked ‡ have one 18-inch tube only.

United States.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.	
			Length. (Extreme.)	Beam.	Draught.								Oil.	
DESTROYERS—														
Davis ..	Bath, I.W. Co.	1936-1938	381	36½	10½	2	1850	52,000	37	8 5-in., 8 M.G.	12 21-in.	195	500	
Sampson ..	Federal S.B. & D.D. Co.													
Jouett ..	Federal S.B. & D.D. Co.													
Somers ..	Federal S.B. & D.D. Co.													
Warrington ..	Federal S.B. & D.D. Co.													
Porter ..	N.Y.S. Co., Camden													
Selfridge ..	N.Y.S. Co., Camden													
McDougal ..	Bethlehem S.B. Co., Quincy			381	36½	10½	2	1850	50,000	37	8 5-in. guns 8 M.G.	8 21-in.	175	500
Winslow ..	Bethlehem S.B. Co., Quincy													
Phelps ..	Bethlehem S.B. Co., Quincy													
Clark ..	Bath I.W. Co.	1939												
Moffett ..	Federal S.B. & D.D. Co.													
Balch ..	Federal S.B. & D.D. Co.													
Grayson ..	Boston, N.Y.													
Eberle ..	Boston, N.Y.													
Plunkett ..	Puget Sound Bethlehem S.B. Co.		Bldg.	341 W.L.	35½	10½	2	1630	50,000	37	5 5-in.	8 21-in.	..	..
Kearney ..	Bath I.W. Co.													
Gwin ..	Federal S.B. & D.D. Co.													
Meredith ..	Boston, N.Y.													
Livermore ..	Charleston, N.Y.													
Monssen ..	Federal S.B. & D.D. Co.		341 W.L.	35½	10½	2	1720	50,000	35	5 5-in.	12 21-in.	160	..	
Woolsey ..	Bath I.W. Co.	Bldg.	341 W.L.	35½	10½	2	1630	50,000	37	5 5-in.	8 21-in.	..	..	
Ludlow ..	Federal S.B. & D.D. Co.													
Edison ..	Federal S.B. & D.D. Co.													
Ericsson ..	Boston, N.Y.													
Wilkes ..	Boston, N.Y.													
Nicholson ..	Charleston, N.Y.													
Swanson ..	Federal S.B. & D.D. Co.													
Ingraham ..	Charleston, N.Y.													
Anderson ..	Federal S.B. & D.D. Co.													
Charles F. Hughes	Charleston, N.Y.													
Hilary P. Jones	Puget Sound Bethlehem S.B. Co.	Bldg.	341 W.L.	35½	10½	2	1630	50,000	37	5 5-in.	8 21-in.	..	..	
Lansdale ..	Bath I.W. Co.													
Madison ..	Federal S.B. & D.D. Co.													
Niblack ..	Bath I.W. Co.													
Gleaves ..	Bethlehem S.B. Co., Quincy													
Mayo ..	S. Co. Quincy													
Benson ..	Philadelphia, N.Y.													
Buck ..	Norfolk, N.Y.													
Wainwright	Charleston, N.Y.													
Roe ..	Norfolk, N.Y.													
Morris ..	Norfolk, N.Y.	1939												
Walke ..	Norfolk, N.Y.													
O'Brien ..	Boston, N.Y.													
Russell ..	Newport News													
Mustin ..	Federal S.B. & D.D. Co.													
Hammann ..	Bath, I.W. Co.													
Hughes ..	Puget Sound Bethlehem S.B. Co.													
Sims ..	Charleston, N.Y.													
Wilson ..	Norfolk, N.Y.													
Sterrett ..	Philadelphia, N.Y.													
Stack ..	Norfolk, N.Y.	Bldg.	334 on W.L.	34½	9½	2	1500	42,800	36½	5 5-in. guns 8 M.G.	8 21-in.	190	..	
Rowan ..	Philadelphia, N.Y.													
Rhind ..	Boston, N.Y.													
Trippe ..	Boston, N.Y.													
Mayrant ..	Bethlehem S.B. Co.													
Maury ..	Federal S.B. & D.D. Co.													
McCall ..	Boston, N.Y.													
Lang ..	Bethlehem S.B. Co.													
Ellet ..	Federal S.B. & D.D. Co.													
Benham ..	Navy Yard, Puget Sound													
†Jarvis ..	Navy Yard, Mare Is.	1936-1938												
†Patterson ..	Navy Yard, Boston													
†Henley ..	Navy Yard, Boston													
†Ralph Talbot	Navy Yard, Boston													
†Mugford ..	Navy Yard, Boston													
†Helm ..	Navy Yard, Boston													
†Blue ..	Navy Yard, Boston													
†Bagley ..	Norfolk, D.D. Co.													
Fanning ..	United D.D. Co.													
Dunlap ..	United D.D. Co.													

† Fitted with 4 5-inch guns.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons		Knots.				Tons.
DESTROYERS—<i>continued.</i>													
†Craven .. .	Bethlehem S. B. Co.												
†Gridley .. .	United D. D. Inc., N.Y.												
Mahan .. .	Bath I. W. Co.												
Cummings .. .	Co.												
Drayton .. .	Federal S. B. & D. D. Co.												
Lamson .. .	Navy Yard, Boston												
Flusser .. .													
Reid .. .													
Case .. .													
Conyngham .. .		1936–1938	334 on W.L.	34½	9½	2	1,500	42,800	36½	5 5-in. guns 8 M.G.	8 21-in.	190	..
Cassin .. .	Navy Yard, Philadelphia												
Shaw .. .	Navy Yard, Norfolk												
Tucker .. .	Navy Yard, Puget Sound												
Downes .. .	Navy Yard, Mare Is.												
Cushing .. .													
Perkins .. .													
Smith .. .													
Preston .. .													
Dale .. .													
Monaghan .. .	Navy Yard, Boston	1935	334	34½	9½	2	1,395	42,800	36½	5 5-in. A.A. 8 M.G.	8 21-in (Q)	160	400
Aylwin .. .	Navy Yard, Philadelphia						1,375						
Farragut .. .	Bethlehem S. B. Co.	1934					1,365						
Dewey .. .	Bath, I. W. Co.						1,345						
Hull .. .	N.Y.						1,395						
MacDonough .. .	Navy Yard, Boston	1935	334	34½	9½	2	1,395	42,800	36½	5 5-in. A.A. 8 M.G.	8 triple (Q)	160	400
Worden .. .	Navy Yard, Puget Sound						1,410						
Pruitt .. .		1920						25,000					
Sicard .. .	Bath, I. W.	1920											
Preble .. .													
William B. Preston .. .	Norfolk, N.W.	1920											
Noa .. .		1921											
Hulbert .. .		1920											
Decatur .. .		1922						26,000					
Perry .. .	Navy Yard, Mare Is.	1922											
Trever .. .		1922											
Wasmuth .. .		1921											
Zane .. .		1921											
Litchfield .. .		1920											
Meade .. .													
Swasey .. .													
Thornton .. .	Bethlehem S. B. Co., Squantum												
Bailey .. .													
Shubrick .. .													
Ballard .. .													
Greene .. .													
Edwards .. .													
McLanahan .. .													
Laub .. .								27,000					
Gillis .. .		1919											
Aulick .. .													
Welles .. .													
Bancroft .. .	Bethlehem S. B. Co., Quincy		314.4	31	9.8	2	1,190		35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375
Osmond Ingram .. .													
Rodgers .. .													
McCalla .. .													
McCook .. .		1919											
Belknap .. .		1921											
Lawrence .. .		1921											
Hopkins .. .		1920											
Barry .. .		1921											
Goff .. .		1921											
Bainbridge .. .													
Reuben James .. .													
Williamson .. .													
Sands .. .													
King .. .													
Childs .. .	New York S. B. Co.												
Sturtevant .. .													
Overton .. .		1920						27,000		(Kane, Fox, Brooks, and Hatfield have 4 5-in. guns.)			
McFarland .. .													
Humphreys .. .													
Kane .. .													
Fox .. .													
Gilmer .. .													
Brooks .. .													
Hatfield .. .													

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel																						
			Length. (extreme.)	Beam.	Draught.								Oil.																						
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.																						
DESTROYERS— <i>continued.</i>																																			
Paul Jones ..	Cramp, Pa.	1921	314·4	31	9·8	2	1,190	26,000	35	4 4-in., 1 3-in. A.A. (Parrot, Whipple, Edws. Borie & Tracy have 4 5-in. guns).	4 triple 21-in.	122	375																						
Truxton ..																																			
John D. Ford ..																																			
Pillsbury ..																																			
Peary ..																																			
Pope ..	Cramp, Pa.	1920												314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A. (Long and Hovey have 8 4-in. in twin mtgs. and 1 3-in. A.A.)	4 triple 21-in.	122	375											
Stewart ..																																			
McCormick ..																																			
Bulmer ..																																			
Simpson ..																																			
MacLeish ..	Cramp, Pa.	1920																							314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375
Edsall ..																																			
Parrott ..																																			
Whipple ..																																			
J. D. Edwards ..																																			
Borie ..	Newport News S.B. Co.	1919	314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A. (Long and Hovey have 8 4-in. in twin mtgs. and 1 3-in. A.A.)	4 triple 21-in.	122	375																						
Tracy ..																																			
Barker ..																																			
Alden ..																																			
Broome ..																																			
Long ..	Newport News S.B. Co.	1920												314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375											
Hovey ..																																			
Southard ..																																			
Chandler ..																																			
Dallas ..																																			
Herndon ..	Newport News S.B. Co.	1921																							314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375
Branch ..																																			
George E. Badger ..																																			
Welborn C. Wood ..																																			
Hunt ..																																			
Abel P. Upshur ..	Newport News S.B. Co.	1920	314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375																						
Mason ..																																			
Satterlee ..																																			
Goldsborough ..																																			
Dahlgren ..																																			
Clemson ..	Union I.W.	1919												314·4	31	9·8	2	1,060	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286											
DD 185 (ex-Bagley) ..																																			
Abbot ..																																			
Haraden ..																																			
Thomas ..																																			
Hopewell ..	Union I.W.	1920																							314·4	31	9·8	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
Stansbury ..																																			
Howard ..																																			
Hogan ..																																			
Mackenzie ..																																			
Kalk ..	Fore River S.B. Co.	1919	314·4	31	9·8	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283																						
Foot ..																																			
Maddox ..																																			
Cowell ..																																			
Crosby ..																																			
Walker ..	Fore River S.B. Co.	1918												314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286											
Thatcher ..																																			
Palmer ..																																			
Herbert ..																																			
Schenck ..																																			
Leary ..	N.Y. S.B. Co.	1919																							314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Dickerson ..																																			
J. Fred Talbot ..																																			
Cole ..																																			
Ellis ..																																			
Bernadou ..	Cramp, Phil.	1919	314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286																						
Dupont ..																																			
Biddle ..																																			
Blakeley ..																																			
Barney ..																																			
Breckenridge ..	Cramp, Phil.	1918												314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286											
Roper ..																																			
Elliot ..																																			
Greer ..																																			
Upshur ..																																			
Yarnall ..	Cramp, Phil.	1918																							314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Tarbell ..																																			

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.			Tons.	Knots.				Tons.
DESTROYERS— <i>continued.</i>													
Hamilton ..	Mare Island, N.Y.	1919											
Claxton ..		1919											
Ward ..		1918											
Kennison ..		1919						24,200					
† Kilty ..		1918											
† Boggs ..		1918	314.4	31	9.5	2	1,090		35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
* Tillman ..		1921											
Crowninshield	Bath I.W.							26,000					
Hale ..		1919						24,200					
Aaron Ward								26,000					
Buchanan ..	New York S.B. Co.												
Jacob Jones													
Babbitt ..		1919	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Twiggs ..													
Badger ..													
Tattnall ..													
† Lamberton ..	Newport News S. Co.	1919	314.4	31	9.8	..	{1060 1090}	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
		1918											
Lea ..	Cramp, Pa.		314.4	31	9.8	..	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Dorsey ..													
Dent ..													
Waters ..													
Talbot ..													
Rathburne ..		1919								(Rathburne has 3 4-in.)			
Crane ..	Union Plant.	1919	314.4	31	9.8	..	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
Williams ..		1918											
Chew ..													
Schley ..	Mare Island, N.Y.	1918	314.4	31	9.8	..	1,090	{27,000 24,200}	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Taylor ..													
Fairfax ..													
McKean ..	Union I.W.	1918	314.4	31	9.9	..	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Ringgold ..													
Robinson ..													
Colhoun ..	Fore River S.B. Co.		314.4	31	9.8	..	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
Stringham ..		1918											
Gregory ..													
Nigourney ..													
Little ..													
Evans ..	Bath I.W.		314.4	31	9.7	..	1,090	{27,000 27,000 24,200}	35	{4 4-in., 1 3-in. A.A. 1 3-in. A.A.	4 triple	122	286
Phillip ..													
Wickes ..	Cramp Pa.	1917						20,000	32	{3 4-in., 1 3-in. A.A.			
Manley ..		1917											
Stockton ..		1918						18,500	30	{5 4-in., 1 3-in. A.A.			
Conner ..			315.5	30.7	9.5	..	1020	18,750	30	{4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	260
No. 70, ex-Craven	Norfolk, N.Y.	1918						20,000	32	{4 4-in., 1 3-in. A.A.			
Allen ..	Bath I.W.	1917	315.3	29.9	9.8	..	920	17,500	30	{4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	290
DESTROYERS NOW FITTED AS MINELAYERS—													
Preble ..	Bath Iron- works	1920	314.4	30.5	9	2	1,160	27,000	35	{4 4-in., 1 3-in. A.A. 92 mines	—	107	375
Froitt ..													
Stead ..													
Tracy ..	Cramp	1930											
Ramsay ..	Newport News S. Co.	1918											
Gamble ..			314.4	30.5	9	2	1,160	25,000	35	{4 4-in., 1 3-in. A.A. 92 mines	—	120	286
Breese ..		1919											
Montgomery													

* Out of commission.

† Equipped as targets, wireless controlled.

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement, Surface.	Displacement, Submerged.	Horse-Power.	Maximum Speed, Surface.	Armament.	Torpedo Tubes.	Complement.	Fuel, Oil.
			Length, (Extreme.)	Beam.	Draught.									
			Feet.	Feet.	Feet.		Tons.			Knots				Tons.
SUBMARINES —														
Gan	Electric Boat Co.	Bldg.	..	..	..	..	1,475	..	..	..	..	..	..	..
Grampus ..							—							
Grayback ..							—							
Grayling ..	Portsmouth N.Y.	Bldg.	..	..	..	..	800	..	..	..	..	..	..	..
Grenadier ..							—							
Gudgeon ..							—							
Mackerel ..	Electric Boat Co.	Bldg.	..	..	..	..	1,330	..	..	..	1 3-in.	6 21-in.	57	..
Marlin ..							1,998							
Perch ..							—							
Pickrel ..	Electric Boat Co.	Bldg.	..	..	..	..	1,450	..	..	..	..	..	..	..
Permit ..							—							
Plunger ..							—							
Pollack ..	Portsmouth Navy Yard	1936-1937	300½	25	13-8	2	1,330	..	..	..	1 3-in.	6 21-in.	57	..
Pompano ..							1,998							
Tambor ..							—							
Tautog ..	Electric Boat Co.	Bldg.	..	..	..	..	1,450	..	..	..	..	..	..	..
Thresher ..							—							
Triton ..							—							
Trout ..	Portsmouth Navy Yard	1937	..	..	..	..	1,450	..	..	..	..	..	..	..
Tuna ..							—							
Salmon ..							—							
Seal ..	Electric Boat Co.	1939	..	..	..	..	1,450	..	..	..	..	..	..	..
Skipjack ..							—							
Snapper ..							—							
Stringray ..	Portsmouth Navy Yard	1938	..	..	..	..	1,450	..	..	..	..	..	..	..
Sturgeon ..							—							
Sargo ..							—							
Saury ..	Electric Boat Co.	Bldg. 1939	298 W.L.	26	14½	..	1,450	..	..	17 8	1 3-in.	6 21-in.	55	..
Speartfish ..							—							
Sculpin ..							—							
Squalus ..	Portsmouth Navy Yard	Bldg.	..	..	..	..	1,450	..	..	..	..	..	..	..
Swordfish ..							—							
Sea Dragon ..							—							
Sea Lion ..	Electrical Boat Co.	Bldg.	..	..	..	..	1,450	..	..	..	..	..	..	..
Sea Raven ..							—							
Seawolf ..							—							
Porpoise ..	Portsmouth Navy Yard	1936	283	24-9	13	2	1,310	3,000	14	14	1 3-in.	6 21-in.	50	..
Pike ..							1934							
Shark ..							—							
Tarpon ..	Electric Boat Co.	1936	298	25-1	13-9	2	1,315	..	..	..	1 3-in.	6 21-in.	56	..
Dolphin ..							—							
Cachalot ..							—							
Cuttlefish ..	Portsmouth Navy Yard	1932	319	27-8	13	2	1,540	4,250	17 8	17 8	1 4-in.	6 21-in.	58	..
Argonaut ..							2,215							
Narwhal ..							—							
Nautilus ..	Portsmouth Navy Yard	1934	271½	24-8	13	2	1,110	3,100	17 8	17 8	1 3-in. A.A.	6 21-in.	45	..
Argonaut ..							1,650							
Narwhal ..							—							
Nautilus ..	Portsmouth Navy Yard	1928	381	33-8	15-4	2	2,710	3,175	14-6 8	14-6 8	2 6-in., 60 mines	4 21-in.	86	185
Narwhal ..							4,080							
Nautilus ..							—							
Bonita ..	Portsmouth Navy Yard	1930	371	33-3	16	2	2,730	5,450	17 8	17 8	2 6-in.	6 21-in.	88	185
Bass ..							3,960							
Barracuda ..							—							
S48 ..	Portsmouth Navy Yard	1926	341-5	27	14-6	2	2,000	6,700	19 8	19 8	1 3-in. A.A.	6 21-in.	87	160
S47* ..							2,506							
S46* ..							—							
S45* ..	Lake T.B. Co., Bridgeport	1924	267	21-8	13-5	2	1,000	2,000	14-8 11-0	14-8 11-0	1 4-in.	5 21-in.	38	237
S44* ..							1,458							
S43* ..							—							
S42* ..	Bethlehem Shipbuilding Corp., Quincy Plant	1925	225-3	20-5	16	2	850	1,200	14 10-4	14 10-4	1 4-in.	4 21-in.	44	154
S41* ..							1,126							
S40* ..							—							
S39* ..	Bethlehem Shipbuilding Corp., Union Plant	1923	219-3	20-5	16	2	800	1,200	14-5 11	14-5 11	1 4-in.	4 21-in.	42	140
S38* ..							1,062							
S37* ..							—							
S36* ..														

* Designed by Electric Boat Co., Groton, Conn.

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement. Surface.	Submerged.	Horse-Power.	Maximum Speed. Surface. Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Capacity.		
			Length. (Extreme.)	Beam.	Draught.											
			Feet.	Feet.	Feet.		Tons.			Knots				Tons.		
SUBMARINES— continued.																
S35*	Bethlehem Shipbuilding Corp., Union Plant	1923	219.3	20.5	16	2	800 1,062	1,200 1,500	14.5 11	1 4-in.	4 21-in.	42	140			
S34*		1923														
S33*		1923														
S32*		1923														
S31*		1923														
S30*		1920														
S29*		1924														
S28*		1923														
S27*		1924														
S26*		1923														
S25*	Bethlehem Shipbuilding Corp., Quincy Plant	1923	219.3	20.5	16	2	800 1,062	1,200 1,500	14.5 11	1 4-in.	4 21-in.	42	140			
S24*		1923														
S23*		1923														
S22*		1924														
S21*		1923														
S20*		1922														
R18*		1923														
S17		1921														
S16	Lake T.B. Co., Bridgeport	1920	231	21.5	13	2	790 1,092	2,000 1,200	15.25 9	1 4-in.	4 21-in.	38	123			
S15		1921														
S14	Navy Yard, Portsmouth	1921	231	21.8	13	2	790 1,092	2,000 1,200	14.75 9	1 4-in.	5 21-in.	38	123			
S13		1923														
S12		1923														
S11	Fore River S.B. Co.	1923	219.3	20.7	16	2	800 1,062	1,200 1,500	14.5 11	1 4-in., 1 aeroplane	4 21-in.	38	140			
S1*		1920														
R20*	Union I.W.	1918	186.1	17.5	14.5	2	530 680	880 934	13.5 10.5	1 3-in.	4 21-in.	30	63			
R19*																
R18*																
R17*																
R16*																
R15*																
R14*	Fore River S.B. Co.	1919	172.3	17.5	14.4	2	480 624	880 740	14 10.5	1 3-in.	4 21-in.	30	73			
R13*																
R12*																
R11*																
R10*																
R9*																
R7*																
R6*																
R5*																
R4*																
R3*	Fore River S.B. Co.	1918				2	480 624	880 740	14 10.5	1 3-in.	4 21-in.	30	73			
R2*																
R1*																
O10*																
O9*																
O8*																
O7*																
O6*																
O4*	Fore River S.B. Co.	1918	172.3	17.5	14.4	2	480 624	880 740	14 10.5	1 3-in.	4 21-in.	30	73			
O3*																
O2*																

* Designed by Electric Boat Co., Groton, Conn.

‡ To be disposed of shortly.

The machinery contractors for the vessels of the E. B. Co. Design built in yards other than the Navy Yards were the New London Ship and Eng. Co., Groton, Conn., and the hulls were built under sub-contract from the E. B. Co.

BRITISH AND FOREIGN AIRCRAFT TYPES

BRITISH NAVAL AIRCRAFT TYPES.

FLEET AIR ARM.

Maker, Number, Name.	Type, Number of Seats.	Engine H.P., Make.	Max. speed, m.p.h.	Ceiling, in feet.
Hawker Nimrod.	Single-seater Fighter. Float or Ship Plane.	480 Rolls-Royce "Kestrel."	181	26,900
Hawker Osprey.	Two-seater Fighter. Reconnaissance.	600 Rolls-Royce "Kestrel."	176	22,850
Blackburn Shark.	Torpedo Spotter Reconnaissance. Three-seater.	720 Armstrong-Siddeley "Tiger."	150	—
Fairey Swordfish.	Torpedo Spotter Reconnaissance. Three-seater.	700 Bristol "Pegasus."	150	19,250
Supermarine Walrus.	Fleet Spotter Reconnaissance. Three-seater.	700 Bristol "Pegasus"	135	18,500
Fairey Seafox.	Light Reconnaissance. Two-seater. Seaplane.	350 Napier Rapier.	124	11,000
Blackburn Skua and Roc.	Dive-Bomber. Fighter.	745 Bristol "Perseus"	— 225	— 20,200

**R.A.F. SHORE-BASED AIRCRAFT WHICH MAY BE EMPLOYED IN
CO-OPERATION WITH NAVAL FORCES.***

Maker, Number, Name.	Type, Number of Seats.	Engine H.P. Make.	Max. speed, m.p.h.	Ceiling, in feet.
Vickers Vildebeest.	Torpedo-Bomber. Two-seater.	587 Bristol "Pegasus."	141	16,250
Supermarine Scapa.	Reconnaissance Fly- ing Boat. Five- seater.	Two 525 Rolls-Royce "Kestrel."	143	14,950
Short Singapore III.	Reconnaissance Fly- ing Boat. Five- seater.	Four 525 Rolls-Royce "Kestrel."	136	13,600
Saunders-Roe London.	Reconnaissance Fly- ing Boat. Five- seater.	Two 587 Bristol "Pegasus."	135	14,700
Supermarine Stranraer.	Reconnaissance Fly- ing Boat. Six-seater.	Two 870 Bristol "Pegasus" X.	161	18,500
Short Sunderland.	Reconnaissance Fly- ing Boat. Six-seater.	Four 840 Bristol "Pegasus" XXII.	210	—
Avro Anson.	General Reconnaissance. Four-seater.	Two 310 "Cheetah" IX.	188	19,500
Lockheed Hudson.	General Reconnaissance. Four-seater.	Two 850 Wright Cyclones or Pratt and Whitney "Hornet."	246	—
Saunders-Roe Lerwick	—	Two 1150 "Hercules."	—	—
Bristol Beaufort	—	Two 900 Bristol "Taurus."	—	—

* Aircraft from the Bomber and Fighter Commands of the Metropolitan Air Force may also operate at sea.

AIRCRAFT ENDURANCE.

Hawker Nimrod, 3½ hours at 114 m.p.h. ; Hawker Osprey, 4½ hours at 107 m.p.h. ; Supermarine Walrus, 4½ hours at 95 m.p.h.

Short Singapore III, 8½ hours at 100 m.p.h. ; Supermarine Scapa, 10½ hours at 102 m.p.h. ; Saunders-Roe London, 10 hours at 98 m.p.h. ; Supermarine Stranraer, 10½ hours at 98 m.p.h.

FOREIGN NAVAL AIRCRAFT TYPES.

United States Naval Air Service.

AIRCRAFT, HEAVIER-THAN-AIR.

Maker, Number, Name.	Type, Number of Seats.	Engine H.P. Make.	Max. speed, m.p.h.	Ceiling (Service), in feet.
Grumman. F3F-2.	Single-seater Fighter.	"Cyclone."	270	32,000
Grumman. F3F-3.	Single-seater Fighter.	750 "Cyclone."	—	—
Vought-Sikorsky. SB2U-1.	Two-seater Scout Bomber.	750 "Twin- Wasp."	205	24,600
Curtiss. SBC-3.	Two-seater Scout Bomber.	—	—	—
Curtiss. SBC-4.	Two-seater Scout Bomber.	"Cyclone."	235	24,700
Douglas. TBD-1.	Two-seater Torpedo Bomber.	850 "Twin- Wasp."	270	—
Curtiss. SOC-1.	Two-seater Scout. Observation.	500 "Twin- Wasp."	Landplane 168 Seaplane 165	16,070 14,900
Consolidated. PBV-1.	Multi-seater. Patrol Flying Boat.	Two 900 "Twin- Wasp."	190	25,000
Grumman. J2F-I.	Utility Aircraft.	775 "Cyclone."	180	21,000

All engines are air-cooled. "Wasp" engines are made by Pratt and Whitney.
"Cyclone" engines are made by Curtiss-Wright.

United States—continued.**BASES.**

The United States have the following naval flying bases on shore :—

Pensacola, Florida (Training) ;
San Diego, California (Fleet Base and Marines) ;
Hampton Roads, Virginia (Fleet Base) ;
Lakehurst, New Jersey (Lighter-than-air craft) ;
Pearl Harbour, Hawaii (Fleet Base) ;
Coco-Solo, Canal Zone (Fleet Base) ;
Anacostia, D.C. (Experimental) ;
Seattle, Washington (Reserve Training Base) ;
Squantum, Mass. (Reserve Training Base) ;
Floyd Bennet Field, Brooklyn (Reserve Training Base) ;
Philadelphia (Reserve Training Base) ;
Norfolk, Va. (Reserve Training Base) ;
Miami, Fla. (Reserve Training Base) ;
Great Lakes, Ill. (Reserve Training Base) ;
Grosse Ile, Mich. (Reserve Training Base) ;
Minneapolis, Minn. (Reserve Training Base) ;
St. Louis, Mo. (Reserve Training Base) ;
Kansas City, Kansas (Reserve Training Base) ;
Long Beach, Calif. (Reserve Training Base) ;
Oakland, Calif. (Reserve Training Base) ;
Quantice, Va. (Fleet Marine Base) ;
St. Thomas, V.I. (Fleet Marine Base) ;
Sitka, Alaska (Patrol Flying-Boat Base) ;
Alamada, Calif. (Fleet Base) ;
San Pedro, Calif. (Fleet Base).

AIRCRAFT, LIGHTER-THAN-AIR.

A fleet of non-rigid airships has been developed and is used for training and experiment. At intervals it is announced that the U.S. Navy intends to resume rigid airship construction, but during 1939 there was no sign of progress in this direction.

Meanwhile, the non-rigid airships include the L-1, of 123,000 cubic feet capacity and the K-2 of 405,000 cubic feet, both completed in 1938. All U.S. airships are inflated with helium.

Japanese Naval Air Service.

Type.	Crew.	Engine and H.P.	Weight, lbs.	Speed, m.p.h.
<i>Fighter.</i>				
Navy 96	1	—	—	205
<i>Reconnaissance.</i>				
Navy 94	3	Navy Type 91, 500	5,500	140
Navy 95	2	Kotobuki, 600	—	150
<i>Bomber.</i>				
Navy 89	3	Hispano, 650	6,750	144
Navy 92	3	Hiro, 650	6,700	150
Navy 96	3	—	—	—
<i>Flying Boat.</i>				
Short 90-II.	6	3 Rolls-Royce, 800	28,600	137
Navy 91	—	2 Hiro, 650	—	137

French Naval Air Service.

Maker, Number, Name.	Type, Number of Seats.	Engine H.P. Make.	Max. Speed, knots.	Ceiling, Endurance.
Briguet "Bizerta" Flying Boat.	Long Reconnaissance	Three 650 Gnome- Rhône.	130	— 12-15 hrs.
C.A.M.S. 37 Flying Boat.	Short Reconnaissance 3	600 Hispano Suiza.	108	14,760 5 hrs.
C.A.M.S. 55 Flying Boat.	Long Reconnaissance 3-5	Two 600 Hispano Suiza.	130	14,700 7 hrs.
Chance- Vought V. 159 Landplane.	Single-seater Fighter (for Aircraft Carrier "Bearn.")	—	—	—
Gourdou- Lesseure 810 Float Sea- plane.	Spotter Reconnaissance 2	450 Gnome-Rhône.	120	16,500 5 hrs.
Latécoère 302 "Croix du Sud" Flying Boat.	Long Reconnaissance 4	Four 650 Hispano Suiza.	130	15,000 10 hrs.
Latécoère 298 Float Sea- plane.	Torpedo Bomber 3	800 Hispano Suiza.	186	19,680 5 hrs.
Levasseur P.L.7 Landplane.	Bomber 2-3 seater (marine type, can alight on water).	600 Hispano Suiza.	108	14,000 5 hrs.
Levasseur P.L.101 Avion Marin.	Short Reconnaissance 3	600 Hispano Suiza.	120	16,400 4 hrs.
Loire- Nieuport 70 "Loire" Flying Boat.	Long Reconnaissance 5	Three 500 Hispano Suiza.	130	19,864 10-12 hrs.
Latécoère 521/523 (Astair, An- tares, etc.)	Long Reconnaissance	Six	140	40 hrs.
Lioré et Olivier. Léo H.43	Short Reconnaissance and Bombing.	One	120	3 hrs.
Loire- Nieuport 130 Flying Boat.	Reconnaissance Cata- pult Plane.	One	130	7½ hrs.

French Naval Air Service—continued.**BASES.**

The bases and aerodromes of the Naval Air Service are as follows:—

1re Région (Cherbourg).
Chantereyne.

2me Région (Brest).
Lanveoc Poulmic ;
Rocheport ;
Hourtin.

3me Région (Berre).
St. Raphael ;
Berre ;
St. Mandrier ;
Aspretto (Corsica) ;
Hyères.

4me Région (Bizerta).
Karouba.

In August, 1939, there were two "flying fleets," one of five "flights" attached to the Atlantic Fleet, and one of seven "flights" attached to the Mediterranean Fleet.

There was also one squadron in Indo-China, one in Martinique, and one at Papeete (Tahiti).

AIRCRAFT, LIGHTER-THAN-AIR.

Lighter-than-air craft activities received a severe set-back when the "Dixmude" (ex-German L27) was lost with all hands off the coast of Sicily on December 20, 1923. The French Navy is now developing two classes of airship, the "Vedettes" and the "Escorteurs." The "Vedettes," of which there are nine, are of about 125,000 cubic feet capacity, speed of about 40 m.p.h., a crew of four, and endurances varying from 15 to 25 hours. The "Escorteurs," of which there are four, are of about 350,000 cubic feet, have a speed of about 40 m.p.h., a crew of six, and an endurance of about 40 hours.

Italian Naval Air Service.

Maker, Name, Number.	Type, Number of Seats.	Engine H.P. Make.	Max. Speed, m.p.h.	Ceiling. Endurance.
Alfa Romeo. RO43. Shiplane	Two-seater Recon- naissance.	610 "Piaggio."	200	— 6 hrs.
Cant. Z501. Flying Boat.	Four-seater Recon- naissance.	850 Isotta-Fraschini "Asso."	155	— 620 miles.
Cant. Z506B. Floatplane	Bomber-Reconnais- sance.	3-770 "Alfa-Romeo."	242 .	13,000 —

**BRITISH AND FOREIGN
ORDNANCE TABLES**

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS.

Tables Corrected by the Manufacturers, January, 1940.

NAVAL GUNS AND MOUNTINGS.

System	40 mm. 2-pdr.	40 mm. 2-pdr.	40 mm. 2.2-pdr.	47 mm. 3-pdr.	57 mm. 6-pdr.	4-in. 101.6 mm.	4-in. 101.6 mm.	4.7-in. 120 mm.	4.7-in. 120 mm.	5-118-in. 130 mm.	5-5-in. 139.7 mm.	5-906-in. 150 mm.
	Auto.	Auto.	Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.
Diameter of Bore	1.575	1.575	1.575	1.85	2.244	4	4	4.724	4.724	5.118	5.5	5.906
do.	40	40	40	47	57	101.6	101.6	120	120	130	139.7	150
Length of Bore	38.37	50	50	50	57	45	45	50	50	52	50	50
Weight of Gun	590	655	1,433	c q. lb.	c q. lb.	c q. lb.	c q. lb.	t. c. q.	t. c. q.	t. c.	t. c.	t. c.
do.	268	297	650	5 3 14	9 1	36 0	36 0	3 6 3	3 6 3	4 8	4 13	6 15
Weight of Projectile	2	2	2.2	2.2	6	1,830	2,204	3,000	3,391	4,470	4,740	6,858
do.	0.91	0.91	1	1.5	2.72	31	31	48.5	48.5	68	79.37	100
Muzzle Velocity	2,000	2,461	2,625	2,800	2,600	14.06	14.06	22.0	22.0	30.85	36	45.4
do.	600	750	800	853	792	3,000	3,000	3,000	3,000	3,000	3,000	2,940
Muzzle Energy	54	84	105	180	280	915	915	850	915	915	915	896
do.	17.0	26	32	55.75	86.7	1,935	2,616	3,025	3,025	4,245	4,953	5,995
Penetration (W.I. at muzzle).	..	..	..	6.7	7.5	485	600	810	935	1,315	1,535	1,857
do.	..	..	..	170	190	13.6	16	16.6	18.0	20	22	23
Rounds per Minute	200	200	130-140	30	28	405	405	420	420	510	560	585
Weight of Mounting and Shield	1,576	..	2,128	c. q. lb.	c. q. lb.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.
do.	760	..	965	11 1 23 17	3 10 2	3 5 1	3 5 1	4 10 3	7 15 1	9 0 9	9 24 6	14 51 7
Weight of Shield	..	..	..	582	906	2,985	3,315	5,067	7,887	9,158	9,246	14,517
do.	..	..	..	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.	c. q. lb.
Thickness of Shield	..	..	..	1 0 20	1 2 10	7 2 0	14 1 13	7 3 0	18 3 21	19 0 0	2 0 0	3 4 0 0
do.	..	..	..	..	..	..	..	..	..	..	..	..
Angle of Elevation	85	..	..	..	6.35	3.65	3.65	3.65	3.65	1.118	1.875	6.375
Angle of Depression	5	..	..	20	20	30	30	35	45	36	47.6	16.8 9.5
do.	..	..	..	20	10	10	10	10	10	10	10	10

The above guns are of all-steel construction.

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS. NAVAL GUNS AND MOUNTINGS—continued.

	6-in. 152 mm.	6-in. 152 mm.	8-in. 203 mm.	8-in. 203 mm.	8-in. 203 mm.	9-2-in. 234 mm.	10-in. 254 mm.	12-in. 305 mm.	13-5-in. 343 mm.	14-in. 356 mm.	15-in. 381 mm.	16-in. 406 mm.
Diameter of Bore	6	6	8	8	8	9-2	10	12	13-5	14	15	16
do. do.	152-4	152-4	203-2	203-2	203-2	233-7	254	304-8	342-9	355-6	381	406-2
Length of Bore	45	50	45	50	55	50	50	50	45	50	45	45
Weight of Gun	t. c.	t. c.	t. c.	t. c.	t. c.	t. c. q.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.
do. do.	6 10	6 17	14 0	15 14	16 10	28 16-2	26 1	43 10	66 0	80 0	87 0	105 0
Weight of Projectile	6,605	6,985	14,225	15,940	16,765	29,290	26,470	44,200	67,060	81,284	88,400	106,685
do. do.	lb.	100	250	256	256	380	500	850	1,400	1,560	1,951	2,000
Muzzle Velocity	45-4	45-4	113-4	116-0	116-0	172-37	226-8	385-6	635	707-6	885	907-2
do. do.	kg.	3,000	2,845	3,000	3,150	3,000	2,933	2,933	2,500	2,475	2,500	2,650
Muzzle Energy	869	915	867	914	960	914	894	894	762	754	760	808
do. do.	m.s.	6,240	14,080	15,976	17,615	23,714	29,825	50,705	60,675	66,260	84,550	97,390
Penetration (W.I. at muzzle)	1,745	1,930	4,345	4,950	5,445	7,340	9,235	15,705	18,790	20,520	26,185	30,160
do. do.	ins.	22	31	34-5	38	38-8	41-7	50-3	51-5	51-65	55	59
Rounds per Minute	560	610	785	875	965	985	1,060	1,280	1,310	1,310	1,400	1,500
do. do.	10	10	10	6	6	4	3	2	1-5	1-5	1-5	1-2
Weight of Mounting and Shield	t. c. q.	t. c. q. lb.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.	t. c.
do. do.	12 9-2	12 1 0	144 10	147 10	149 10	257	287	431	558	588	844	1,270
Weight of Shield	12,245	12,245	140,800	150,000	152,000	261,100	291,600	438,000	567,000	597,500	857,500	1,290,000
do. do.	kg.	kg.	t.	t.	t.	t.	t.	t.	t.	t.	t.	t.
Weight of Shield	4 3 16	4 3 16	24	24	24	102	115	150	192	191	315	670
do. do.	3 4 0	3 4 0	24	24	24	103,600	117,000	153,400	195,100	194,000	320,000	680,700
Thickness of Shield	4 3 15	4 3 15	24,400	24,400	24,400	8, 7 3	6, 4 6	13, 11	11, 4 & 3	10, 9 & 3	15, 12	15, 11, 8,
do. do.	1-5 & 1	-625 & 1	1 & -75	1 & -75	1 & -75	8, 2	1-5	3	11, 4 & 3	11 & 5	11 & 5	4 & 3
do. do.	38 & 25-4	16 & 9-5	25 & 20	25 & 20	25 & 20	203, 178, 75 & 50	152, 102, & 38	330, 280, & 75	280, 102, & 75	254, 230, & 75	381, 305, 280, 127	381, 305, 280, 102, & 75
Angle of Elevation	30	35	70	70	70	15	40	15	20	25	30	40
Angle of Depression	5	10	3	3	3	5	5	5	5	5	5	5

The above guns are of all-steel construction. Guns of steel and wire construction are manufactured for some of the above having approximately the same characteristics.

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS. HOWITZERS AND FIELD GUNS.

	2-953-in. 75 mm. Field.	2-953 75 3	4-134-in. 105 mm. Howr.	4-134-in. 105 mm. Field.	4-134-in. 105 mm. Field.	4-134-in. 105 mm. Field.	6-in. Howr. On 105 mm. Carriage.	6-in. 152 mm. Field.	8-in. 203 mm. Railway.	8-268-in. 210 mm. Semi- Mobile.	12-in. 305 mm. Railway.	15-in. 381 mm. Railway.
Diameter of Bore	ins.	2-953	4-134	4-134	4-134	4-134	6	6	8	8-268	12	15
Length of Bore	ins.	75	105	105	105	105	152	152	203	210	305	381
Weight of Gun	lbs.	3	11	35	35	35	20	45	50	40	50	45
Weight of Projectile	kg.	7	11	12	12	12	16	16	15	11	10	10
Muzzle Velocity	ft.s.	1433	584	610	610	610	1346	5700	15500	11125	44200	88400
Muzzle Energy	m.s.	6.5	12.0	15.0	15.0	15.0	90-17	100	256	286-6	385-6	1951
Muzzle Energy	ft.s.	1952	2461	2000	2543	2543	1591	2870	2900	130	2933	2500
Muzzle Energy	m.s.	595	750	490	610	610	1583	875	884	795	394	760
Muzzle Energy	ft.s.	379	602	474	915	915	1583	5730	14930	13515	50705	84550
Muzzle Energy	m.t.	117	186	147	284	284	490	1774	4625	4185	15705	26185
Rounds per Minute	do.	25	10	10	10	10	..	4	4	3	5 in 2 mins.	2
Weight of Mounting and Shield	kg.	11	19	16	19	19	2	7	62	28	175	275
Weight of Mounting and Shield	kg.	1,091	1,219	1,498	2,388	2,997	2,629	7,820	63,400	28,450	177,800	279,400
Weight of Shield	kg.	1	2	2	2	2	..	..	..	..	No Shield	No Shield
Thickness of Shield	ins.	16	16	16	16	16	..	..	..	..	..	..
Angle of Elevation	deg.	40	45	45	45	45	45	45	50	50	35	40
Angle of Depression	deg.	5	8	5	5	5	5	5	0	2	0	0

	57 mm. 6-pdr. Semi-Auto.	47 mm. 3-pdr. Semi-Auto.	40 mm. 2-pdr. Semi-Auto.	FOR VICKERS CARDEN LOYD VEHICLE.	47 mm. 3-pdr.	2-953-in. (75 mm.) Jointed.	4-134-in. (105 mm.) Jointed.	2-953 in. (75 mm.) Jointed.
Diameter of Bore	ins.	1-85	1-575	1-85	1-85	2-953	4-134	2-953
Length of Bore	ins.	47	40	47	47	75	105	75
Weight of Gun	lbs.	35	50	35	21	18	11	18
Weight of Projectile	kg.	2	2	2	165	3	5	3
Weight of Projectile	kg.	133	108	108	74-8	179-8	254	179-8
Weight of Projectile	kg.	6	2	2	3-3	14-33	26-45	14-33
Muzzle Velocity	ft.s.	1854	2600	2600	A.P. Shell. H.E. Shell.	6-5	12	6-5
Muzzle Velocity	m.s.	565	792	792	1,600	1450	350	1450
Muzzle Energy	ft.s.	79	93-7	93-7	488	442	210	442
Muzzle Energy	m.t.	24-5	29	29	58-6	65-0	74-5	210
Rounds per Minute	do.	..	..	..	18-1	18	10	65-0
Weight of Mounting and Shield	kg.	2	2	2	9	9	12	11
Weight of Mounting and Shield	kg.	3	3	3	14	14	922	559
Thickness of Shield	ins.	..	..	..	476	476	3	3
Thickness of Shield	ins.	..	..	..	1	1	3	1
Angle of Elevation	deg.	30	30	30	63-5	63-5	92	65-75
Angle of Depression	deg.	10	10	10	3-6	3-6	4-0	16
Angle of Depression	deg.	10	10	10	45	45	45	45

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS. GUNS MOUNTED ON AIRCRAFT.

System	• 303-in. (7.7 mm.) for aircraft gun.		• 303-in. (7.7 mm.) Observer's gun.		• 303-in. (7.7 mm.) Pilot's gun.		• 5-in. (12.7 mm.) Observer's gun.		• 5-in. (12.7 mm.) Pilot's gun.		1.457-in. (37 mm.) Observer's gun.		1.575-in. (40 mm.) Observer's gun.	
	Vickers- Armstrongs Gas operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers- Armstrongs Recoil operated.	Vickers Semi-Auto. operated.		
Diameter of Bore	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.
do. do.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Length of Bore	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Weight of Gun	lb.	20.5	25	79.2	93.7	26.5	45	50	62.2	62.2	39.5	39.5	40	40
do. do.	kg.	9.3	11.3	35.2	42.2	12	20.4	22.7	28.2	28.2	17.5	17.5	18.1	18.1
Weight of projectile	lb.	174 gra.	174 gra.	174 gra.	174 gra.	174 gra.	565 gra.	565 gra.	565 gra.	565 gra.	565 gra.	565 gra.	565 gra.	565 gra.
do. do.	kg.	11.3 grms.	11.3 grms.	11.3 grms.	11.3 grms.	11.3 grms.	38.6 grms.	38.6 grms.	38.6 grms.	38.6 grms.	38.6 grms.	38.6 grms.	38.6 grms.	38.6 grms.
Muzzle Velocity	f.s.	2,400	2,400	2,400	2,440	2,440	2,450	2,450	2,550	2,550	1,950	1,950	2,300	2,300
do. do.	m.s.	732	732	732	744	744	746	746	777	777	594	594	700	700
Muzzle Energy	f.t.	0.9	0.9	0.9	1	1	3.36	3.36	3.84	3.84	38.72	38.72	73	73
do. do.	m.t.	0.28	0.28	0.28	0.31	0.31	1.04	1.04	1.25	1.25	11.98	11.98	22.6	22.6
Rounds per Minute	lb.	900-1000	650-750	900-1000	900-1000	900-1000	450-650	450-650	450-650	450-650	100	100	100	100
Weight of Mounting	lb.	5	..	..	..	..	..	..	..	..	102	102	432	432
do. do.	kg.	2.3	..	..	..	..	..	..	..	..	46	46	196	196
Angle of Elevation	deg.	90	..	..	..	..	..	..	..	..	55	55	60	60
Angle of Depression	deg.	90	..	..	..	..	..	..	..	..	40	40	30	30

MACHINE GUNS—ANTI-AIRCRAFT.

System	• 303-in. (7.7 mm.)		• 303-in. (7.7 mm.)		• 303-in. (7.7 mm.)		• 5-in. (12.7 mm.)		• 5-in. (12.7 mm.)	
	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.
Diameter of Bore	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.
do.	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Length of Bore	cala.	cala.	cala.	cala.	cala.	cala.	cala.	cala.	cala.	cala.
Weight of Gun	lb.	32	32	32	32	32	32	32	32	32
do.	kg.	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Weight of Projectile	lb.	174 gra.	174 gra.	174 gra.	174 gra.	174 gra.	565 gra.	565 gra.	565 gra.	565 gra.
do.	kg.	78.7	78.7	78.7	78.7	78.7	25.6	25.6	25.6	25.6
Muzzle Velocity	f.s.	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440
do.	m.s.	744	744	744	744	744	744	744	744	744
Muzzle Energy	f.t.	1	1	1	1	1	3.64	3.64	3.64	3.64
do.	m.t.	.31	.31	.31	.31	.31	1.125	1.125	1.125	1.125
Rounds per minute	deg.	500-600	450-600	450-600	450-600	450-600	450-650	450-650	450-650	450-650

* This gun can be adapted to fire any pattern of rifle calibre ammunition.

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS. ANTI-AIRCRAFT GUNS.

System	40 mm. 2-pdr.	40 mm. 2.2-pdr.	47 mm. 3-pdr.	Mobile 76 mm. 40 Calibre	Mobile 76 mm. 46 Calibre	3-inch	4-in.	4-in.	105 mm. 45 Calibre	4.7-in.
	Auto.	Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.
Construction	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Diameter of bore	1.575	1.575	1.85	2.933	2.933	3	10.16	10.16	4.134	4.724
Length of bore	40	40	47	75	75	76.2	45	45	105	120
Weight of gun	39.37	50	50	40	46	50	50	50	45	40
Weight of projectile	lb.	lb.	c. q. lb.	c. q. lb.	c. q. lb.	t. c. q.	t. c. q.	t. c. q.	t. c. q.	t. c. q.
Weight of projectile	655	1,433	3.3	11	13	1	1	2	2	3
Muzzle velocity	2,000	2,205	2,800	560	666	1,181	1,842	2,204	2,110	3,100
Muzzle energy	750	1,433	853	1433	1433	1433	31	31	3,674	485
Muzzle energy	64	105	180	602	696	780	2,700	3,000	2,825	2,540
Rounda per minute	17	32	55.75	186	215	201	1,585	1,915	1,886	2,905
Weight of mounting	200	130-140	30	..	..	25	18	18	..	12
(exclusive of Gun)	c. q. lb.	c. q. lb.	c. q. lb.	t. c. q. lb.	t. c. q. lb.	t. c. q. lb.	t. c. q. lb.	t. c. q. lb.	t. c. q.	t. c. q. lb.
Angle of elevation	14 3 24	19 0 0	18 2 3	2 5 2 23	2 5 2 18	2 18 2	6 14 0 18	10 5 1 0	6 18 2	9 0 1 0
Angle of depression	760	965	941.1	2,322	2,320	2,971	6815	10,427	6,020	9,157.1
	85	90	80	90	90	90	90	90	90	90
	5	5	5	0	0	5	5	5	5	5

VICKERS-ARMSTRONGS LIMITED—GUNS AND MOUNTINGS. MACHINE AND AUTOMATIC GUNS.

	• 303-in. (7.7-mm.) Observer's Gun for Aircraft.	• 303-in. (7.7-mm.) Pilot's Gun for Aircraft.	• 303-in. (7.7-mm.) Land and Naval.	• 303-in. (7.7-mm.) Gun for Aircraft.	• 303-in. (7.7-mm.) Observer's Gun for Aircraft.	• 5-in. (12.7-mm.) Pilot's Gun for Aircraft.	• 5-in. (12.7-mm.) Land and Naval.	• 5-in. (12.7-mm.) Land and Naval.	• 5-in. (12.7-mm.) Anti- Aircraft and Tank.	1.457-in. (37-mm.) Observer's Gun for Aircraft.	1.575-in. (40-mm.) 2-pr. Anti- Aircraft.	1.575-in. (40-mm.) 2-pr. Auto.	1.575-in. (40-mm.) 2-pr. Anti- Aircraft.
System.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers- Arm- strongs Gas operated.	Vickers- Berthier Gas operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers- Arm- strongs Gas operated.	Vickers- Arm- strongs Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.	Vickers Recoil operated.
Diameter of Bore	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.
do. do.	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Length of Bore	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2	79.2
Weight of Gun	25	25	25	25	25	25	25	25	25	25	25	25	25
do. do.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Weight of Projectile	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
do. do.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.
Muzzle Velocity	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
do. do.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.	f.s.
Muzzle energy	732	732	732	732	732	732	732	732	732	732	732	732	732
do. do.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.	m.s.
do. do.	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
do. do.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.
do. do.	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
do. do.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.	m.t.
Rounds per minute	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750	650-750
Weight of Mounting	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000	900-1000
do. do.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Angle of Elevation	..	..	..	..	..	..	..	..	..	..	..	..	..
do. do.	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°
Angle of Depression	..	..	..	..	..	..	..	..	..	..	..	..	..
do. do.	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°

* This gun can be adapted to fire any pattern of rifle calibre cartridge.

BEARDMORE GUNS AND HOWITZERS.

NAVAL.

	4	4-7	4-7	4-7	5-5	5-5	5-5	6-0	6-0	7-5	8	8	9-2	12	13-5	15	16
Calibre	ins.	101-6	120	120	140	140	140	152	152	190	203-2	203-2	234	305	343	381	406
do.	mm.	2555	3048	3048	3556	3556	3556	3913	3913	4827	5180	5180	5942	7620	8688	9654	10270
Length of Bore	ins.	21-6	21-6	21-6	24-0	24-0	24-0	27-0	27-0	33-0	33-0	33-0	39-0	48-0	54-0	60-0	66-0
Weight of Gun	tons	2-184	2-489	2-489	3-711	3-711	3-711	4-288	4-288	5-435	5-435	5-435	6-425	7-850	8-850	9-850	10-850
do.	lbs.	3711	3711	3711	6405	6405	6405	7488	7488	9543	9543	9543	11181	13680	15480	17280	19080
Weight of Projectile	lbs.	1306	22-68	22-68	32-00	32-00	32-00	37-00	37-00	45-36	45-36	45-36	54-00	66-00	78-00	88-00	98-00
do.	kg.	592	1028	1028	1450	1450	1450	1680	1680	2052	2052	2052	2448	2982	3516	3968	4416
Muzzle Velocity	ft.s.	2920	3000	3000	3250	3250	3250	3600	3600	4200	4200	4200	4800	5800	6600	7400	8200
do.	m.s.	890	914	914	990	990	990	1100	1100	1280	1280	1280	1463	1770	2012	2267	2522
Muzzle Energy	ft.t.	1-833	3-017	3-017	4-384	4-384	4-384	5-117	5-117	6-116	6-116	6-116	7-200	8-850	10-400	12-000	13-600
do.	m.t.	508	934	934	1337	1337	1337	1584	1584	1831	1831	1831	2160	2520	2880	3240	3600

	ANTI-AIRCRAFT.				TANK GUNS.			
	Motor Boats or Sub-marines.	Sub-marine.	For Sub-marines.	Semi-Auto.	Fixed.	Fixed.	Mobile.	Fixed.
Calibre	3-0	4-0	3-0	4-0	4-0	4-0	3-0	3-0
do.	ins.	101-6	101-6	101-6	101-6	101-6	101-6	101-6
Length of Bore	75	101-6	75	101-6	101-6	101-6	101-6	101-6
Weight of Gun	45	45	45	45	45	45	45	45
do.	lbs.	101-6	101-6	101-6	101-6	101-6	101-6	101-6
Weight of Projectile	1-321	1-321	1-321	1-321	1-321	1-321	1-321	1-321
do.	lbs.	292	292	292	292	292	292	292
Muzzle Velocity	2920	2920	2920	2920	2920	2920	2920	2920
do.	ft.s.	890	890	890	890	890	890	890
Muzzle Energy	1-088	1-088	1-088	1-088	1-088	1-088	1-088	1-088
do.	ft.t.	419	419	419	419	419	419	419
do.	m.t.	130	130	130	130	130	130	130

ANTI-TANK.				FIELD GUNS AND HOWITZERS.			
Infantry Guns.				Mountain H.			
Calibre	1-85	1-575	2-24	3-3	4-5	6	8
do.	ins.	47	57	84	112	152-4	203-2
Length of Bore	28-5	37	24	20	13	35	17
do.	cal.	716	688	508	330	354	425
Weight of Gun	1-03	0-92	0-92	1-03	1-168	1-168	1-168
do.	lbs.	52-4	46-7	46-7	45-8	45-8	45-8
Weight of Projectile	3-25	2-0	2-0	3-25	3-25	3-25	3-25
do.	lbs.	720	448	448	720	720	720
Muzzle Velocity	1-550	1-550	1-550	1-550	1-550	1-550	1-550
do.	ft.s.	473	473	473	473	473	473
Muzzle Energy	16-7	17	17	17	17	17	17
do.	ft.t.	419	419	419	419	419	419
do.	m.t.	130	130	130	130	130	130

In same carriage.

In same carriage.

BRAZIL NAVAL ORDNANCE.

Calibre in Centimetres. Length in Calibres.	Model and Maker.	Year of Construction.	Weight of gun in kilograms.	Projectile.		
				Weight of Projectile in kilograms.	Velocity in metres per second.	Muzzle energy in Tons.
305 m/m.	Model I, Armstrong	1908	61-947	385-500	853	—
152 m/m.	Model I, "	1897	7,722	45-300	793	1454
120 m/m.	Model II, "	1898	2-794	20-400	793	—
120 m/m.	Model III, "	1908	3-369	20-400	915	—
120 m/m.	Model Ansaldo	—	—	20-400	—	—
101,6 m/m.	Model I, Armstrong	—	—	12-500	—	—
101,6 m/m.	Model II, "	1908	1,321	14-000	701	—
101,6 m/m.	Model III, Armstrong	1922	1,339	14-000	701	352
101,6 m/m.	Model, N. Vickers-Armstrong	1934	—	14-061	853	—
100 m/m.	Model O.T.O.	—	—	13-750	600	—
87 m/m.	Armstrong	1898	108	6-800	254	—
76 m/m.	Model I, Bethlehem	1918	—	7-700	823	—
76,2 m/m.	Vickers-Armstrong, Model I	1934	—	6-500	780	—
76,2 m/m.	"	1934	—	5-56	620	—
57 m/m.	Model I, Hotchkiss	1898	365	2-720	650	42-4
57 m/m.	"	—	317-5	2-700	701	—
47 m/m.	"	1898	220	1-500	720	28-5
47 m/m.	Model I, Armstrong	1908	259	1-500	701	—
47 m/m.	Model II, Armstrong	1908	371	1-500	817	—
47 m/m.	Model III, "	1908	371	1-500	817	—
47 m/m.	Model I, Nordenfeldt	1898	233-4	1-497	585	—
38 m/m.	"	1898	—	0-810	—	—
40 m/m.	Model I, Hotchkiss	1898	120	0-850	600	15-5
37 m/m.	" M. Nordenfeldt	1898	189	0-453	549	—

This Table has been supplied through the courtesy of Captain Natal Arnaud, in London.

FRENCH NAVAL ORDNANCE.

Calibres (mm.) . . .	340	330	305	203	155	152	138			130			100	90	75	37
Model	1912	1931	1906-10	1924	1920	1930	1929	1923	1910	1924	1919	1917	1926	1924	1925	
Length (in calibres) . .	45	—	45	50	50	55	50	40	55	40	40	45	50	50	50	
Weight of gun (Kgs.) .	66,950	—	54,020	20,716	8,870	7,840	4,300	4,113	5,300	3,875	4,392	1,565	1,600	1,070	158	
Weight of projectile . .	576	—	432	123	58.5	54	40	40	36	32	32	14	9.5	6	0.75	
Weight of charge (Kgs.)	153	—	126	47	19.6	17	12	9	10.5	8	8	4	3	2	0.25	
Pressure (kg/cm ²) . .	2,600	—	2,400	2,750	3,050	3,200	2,500	2,500	2,500	2,420	2,420	2,400	2,500	2,560	2,400	
Muzzle velocity (m/sec.).	794	—	783	850	850	870	800	700	830	734	734	720	850	850	800	

GERMAN NAVAL ORDNANCE.

Calibre.	Usual Naval Designation.	Length in Cal.	Date of Model.	Weight of Gun.	Weight of A.P. Shot.	Initial Velocity.	Maximum penetration direct impact against K.C. at			Danger space against average ships at			Approximate Missile Energy.
							9,000 yards.	6,000 yards.	3,000 yards.	10,000	5,000	3,000	
inch 11	c/m 28	..	'28	tons ..	lbs. 670	foot-secs. ..	inches ..	inches ..	inches ..	yards ..	yards ..	yards ..	foot-tons ..
11	28	40	'01	32.2	661.4	2756	6	10	14	150	450	740	31,600
8	20.3	..	..	..	..	..	..	..	..	..	..	..	..
5.9	15	50	..	5.5	101.4	3084	..	..	..	..	..	..	6,690
5.9	15	45	'09	5	..	2920	..	..	5	..	200	420	5,990
5	12.7	..	..	..	..	..	..	..	..	..	..	..	..
4.1	10.5	45	'16	..	38.2	..	..	..	..	..	..	..	..

Brass cartridge cases to all guns.

15 inch in new 35,000-ton battleships.

Lesser guns : 3.4 inch (88 m/m) firing 22 lb. projectiles in modern and 15 lb. in old models.

A.A. guns : 4.1 inch, 3.5 inch on H.A. mounts ("Flak").

Projectiles : Guns of 11 inch and over fire A.P., Ersatz A.P., H.E., and common shell.

The 1889 and later models have the recoil utilized to return the gun to firing position for pieces over 6 inch. In 6 in., springs are employed.

JAPANESE NAVAL ORDNANCE

Date and Pattern of Gun.	K.M. (1)	V. (2)	A. (3)	V. (4)	A. (5)	A. (6)	V. (7)	— (8)	A. (9)	Carried by
Desig. by Calibre, in cms.	40.6	35.6	20.3	15.2	15.2	15.2	15.2	14	12	(1) Mutu Class.
Calibre, in inches	16	14	8	6	6	6	6	5.5	4.7	(2) Ise Class. Husō Class. Kongō Class.
Total length, in feet	..	..	..	..	..	..	..	..	..	(4) Kongō.
Length of Bore, in ins.	..	..	..	..	..	..	..	..	..	(5) Husō Class. Kongō Class (except Kongō).
Length of Bore, in cala.	45	45	45	50	50	45	45	50	45	(8) Ise Class. Mutu Class. Kuma Class. Tenryū Class.
Total weight, in tons.	..	83	17.3	8	8.7	8.5	7.5	6.25	3.3	(9) Yodo.
Weight of Firing Charge, Armour-piercing Projectile lb.	..	..	..	..	..	..	..	..	..	
Weight { Armour-piercing Projectile . lb. (Common Shell)	2190	1400	250	100	100	100	100	82	45	
Muzzle Velocity, in f.-s., A.P. Projectile .	2780	2526	2740	3000	3000	2130	3000	2725	2988	
Muzzle Energy in foot-tons	118,000	62,500	13,100	6300	6300	3165	6300	4250	2810	
Perforation at Muzzle,† wrought iron, inches	65	48.2	30.5	25.5	25.5	18.3	25.5	20.8	19.2	
Perforation Krupp Steel, 3000 yds.	13.8 at 10,970 metres	..	10½	6½	6½	4½	6½	..	2½	

† By Treseider's Formula.

NETHERLANDS NAVAL ORDNANCE.

Pattern of Gun :—K. = Krupp; B. = A. B. Bofors; V. = Vickers; H.I.H. = Holl. Industrie Handel Mij.

	K.	K.	K.	B.	H.I.H.	B.	H.I.H.	K.	B.	H.I.H.	B.	H.I.H.	K.	K.	K.	V.	B.
																2 pdr.	2 pdr. double
Diameter of Bore mm.	280	240	150	150	150	120	120	105	88	75	88	75	75	50	50	40	40
Length of Barrel cal.	40	40	50	50	50	50	50	50	45	45	55	55	55	40	55	40	60
Weight of Gun kg.	31,000	24,500	7,240	7,250	7,420	4,060	4,285	2,475	1,475	1,665	1,385	1,665	1,470	245	365	280	320
Weight of Projectile kg.	270	172.85	46	46	46.25	24	24	18	10	10	5.90	5.90	5.90	1.75	1.76	0.906	0.955
Muzzle Velocity m/sec.	890	814	900	900	900	900	900	883	800	800	895	895	895	680	895	600	900
Range max. . . m.	16,100	17,200	22,000	22,000	22,000	16,000	16,000	12,000	11,400	11,400	10,500	10,500	10,500	6,000	6,000	5,000	8,500
Rounds per Minute .	3	4	10	10	10	15	15	15	20	20	28	28	28	25	30	230	240
Weight of Gun, Mounting and Shield kg.	197,424	125,700	19,525	20,500	20,790	8,610	9,770	8,245	4,603	3,411	4,700	4,700	4,695	1,128	948	910	3,500
Weight of Shield kg.	—	—	5,270	6,100	6,400	310	310	2,770	—	—	—	—	—	—	—	—	—
Angle of Elevation	15	20	25	29	30	30	35	20	70	35	95	90	80	20	15	85	90
Angle of Depression	4	4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

NORWEGIAN NAVAL ORDNANCE.

THE COAST ARTILLERY.

Official designation :— Calibre mm., length cal.	305	280	280	240	210	210	150	150	150	120	40
Mark A. = Armstrong, B. = Bofors, Kr. = Krupp, Wh. = Whitworth, St. Ch. = St. Chamond	H. 30 B.	K† 40 Kr.	H. 14 Wh.	H. 13, 16 St. Ch.	K† 45 A.	K† 45 St. Ch.	K† 50 A.	K† 50 B.	K† 47.5 A.	K† 43.9 A.	Aut. gun 60 B.
Design. by calibre in cm. . . .	30.5	28	28	24	20.93	20.93	14.91	14.92	14.91	12	4
Calibre in inches	12	11.02	11.02	9.45	8.24	8.24	5.87	5.87	5.87	4.72	1.57
Length { Total in mm. . . .	9,150	4,090	4,090	3,158	9,520	9,520	7,720	7,703	7,082	5,400	2,400
Length { Rifled bore in mm. . . .	3,802.3	1,610.2	1,610.2	1,243.3	3,748.0	3,748.0	3,033.93	3,032.26	2,788.1	2,126	945
Length { Bore in inches	7,358.2	3,192	3,192	2,719.7	7,866.4	7,863.1	6,547.7	6,359.1	5,971.5	4,552	1,936
Capacity of Powder Chamber in dm. ³	289.69	324.21	125.66	107.08	309.7	309.57	257.78	250.36	235.26	179.21	76.2
Capacity of Powder Chamber in dm. ³	30	37	13	12.7	43.8	43.8	50	50	46	43.9	60
Capacity of Powder Chamber cubic inches	85	164.6	26.2	17.8	56.20	56.20	25.4	28.5	18.12	8.47	0.49
No. of grooves	5,187	10044.7	1598.9	1086.3	3429.6	3429.6	1,550	1739.2	1105.8	517	29.9
Twist of rifling in calibres	80	84	72	72	32	64	36	44	28	26	16
Total weight in calibres	40-25	45-25	40-15	14-78	0-30	29-89	0-30	45-30	0-30	0-30	45-30
Total weight in tons	132	80.8	39.5	20	64	43.9	—	38.4	19.6	5.6	1.7
Weight of firing charge, kg. . . .	59	62	7.86-7.95	4.75	24.85	24.85	—	15	9.71	4.5	0.29
Weight of firing charge, lb. . . .	129.8	136.4	17.3-17.5	10.45	54.67	54.67	—	33	21.36	9.9	0.63
Weight of projectile, kg. . . .	385.6	345-255	345-215	215	140	140	45	45	45	20.4	1.0
Weight of projectile, lb. . . .	848.3	759-561	759-473	473	308	308	99	99	99	44.9	2.2
Muzzle velocity, m./sec. . . .	615	630-706	290-350	285	700	700	900	900	778	783	850
Muzzle velocity, feet/sec. . . .	2,017.8	2,067-2,316.4	952.4-1,148.4	935.1	2,296.7	2,296.7	2,961.9	2,961.9	2,552.6	2,569	2,788
Muzzle energy in m. tons	7433.5	6,979.2-6,477.2	1,478.8-1,342.4	890.1	3,500	3,500	1,857.8	1,857.8	1,388	638	36.8
Muzzle energy in foot tons	24,389.3	22,898.8-21,251.7	4,851.9-4,403	2,920.4	11,483.5	11,483.5	6,095.4	6,095.4	4,554	2,093.3	120

* Howitzer.

† K means gun.

NORWEGIAN NAVAL ORDNANCE.

THE NAVY.

Official designation:— Calibre mm., length cal. Mark A. = Armstrong, B. = Bofors, } N. = Nordenfält, H = Hotchkiss } O = Oerlikon	210/44	150/46	120/44	120/44	100/40	100/40	76/50	76/40	76/28	76/28 A.A.	76/21 A.A.	65/43	40/60	20/70
	A.	A.	A. N.	B.	B. I.	B. II.	B.	A.	B.	B.	B.	H. N.	B. Aut. gun.	O Aut. gun.
Design, by calibre in cm. . .	20.93	14.91	12	12	10.16	10.16	7.6	7.6	7.6	7.6	7.6	6.5	4	2
Calibre in inches . . .	8.24	5.87	4.7	4.7	4	4	3	3	3	3	3	2.6	1.57	0.79
Total in mm. . .	9,520	7,093	5,400	5,610	4,334	4,334	4,066	3,139.4	2,316	2,316	1,782	3,025	2,400	2,069
" in inches . . .	374.8	279.25	212.6	220.9	170.6	170.6	160	123.6	91.2	91.2	70.2	119.1	94.5	81.5
Rifled bore in mm. . .	7,866	5,949	4,552	4,524	3,397	3,397	3,243.6	2,600	1,834.1	1,834.1	1,300.1	2,333.5	1,936	
" in inches . . .	309.7	234.2	179.2	178.1	133.7	133.7	127.7	102.4	72.2	72.2	51.2	91.9	76.2	
Length { Powder chamber in mm. . .	1,234	828	661.6	769	587.2	587.2	518.45	410.7	251.7	251.7	251.7	421	314	
inches . . .	48.6	32.6	26	30.3	23.1	23.1	20.4	16.2	9.91	9.91	9.91	16.57	12.3	
Powder chambers in inches . . .	43.8	45.8	44	44.1	40	40	50	40	28	28	21	43.4	60	70
Bore in calibres . . .	32	28	26	36	32	32	28	16	28	28	28	26	16	9
No. of grooves . . .	0.30	0.30	0.30	25.6	30	30	2	0.30	27	27	30	0.28	45.30	36
Twist of rifling in calibres . . .	96.5	17.9-12.9	8.56	8	5	5.6	2	3.15-1.43	0.974	1.3	0.888	1.63	1.6	0.061
Total weight in tons . . .	26	10.7	4.5	4.88	3.25	3.25	1.75	1.05	0.46	0.46	0.46	0.9	0.29	0.17
Weight of firing charge, kg. . .	57.3	22.2	9.92	10.76	7.16	7.16	3.85	2.31	1.01	1.01	1.01	1.98	0.63	0.375
" lb. . .	142	45	20.41	21	14.06	14.06	5.67	5.67	5.67	5.67	5.67	4.0	1.0	0.124
Weight of projectile, kg. . .	313	99.3	44.9	46.3	31	31	12.5	12.5	12.5	12.5	12.5	8.8	2.2	0.273
" lb. . .	700	800-808	783	800	775	775	860	674	500	500	460	725	850	830
Muzzle velocity, m. sec. . .	2,297	2,625-2,651	2,569	2,625	2,543	2,543	2,887	2,211	1,640	1,640	1,510	2,379	2,788	2,723
" foot sec. . .	3,500	1,468-1,500	638	685	429	429	214	131	72.2	72.2	61.2	107	36.8	4.35
Muzzle energy { in m. tons . . .	11,484	4,817-4,992	2,093	2,248	1,408	1,408	702	430	237	237	200	351	120	14.05
in foot tons . . .														

SPANISH NAVAL ORDNANCE.

Calibre.	Length.	Weight of Gun.	Total Weight.	Weight of Charge.	Weight of Shell.	Initial Velocity.	Muzzle Energy.
305 mm.	m. 15·659	kgs. 65,646	kgs. 91,131	kgs. 130	kgs. 385·55	m.p.s. 894	Tn. m. 15,984
203·2 "	10·476	15,900	40,250	35·8	116·1	885	4,698
152·4 "	7·867	8,738	21,337	15	45·36	900	1,020
120 "	5·582	3,226	9,639	6·4	22	850	813
120 " (G.A.) . . .	5·691	2,985	10,655	6·1	22	853	818·5
101·6 " 50 C. . . .	5·292	2,120	5,893	5·275	14·06	914	598
101·6 " 45 C. . . .	4·770	1,840	8,657	3·9	14·06	823	485
101·6 " 40 C. . . .	4·231	1,264	4,750	2·5	14·06	701	352
76·2 " 50 C. . . .	3·987	973	2,154	1·6	5·67	823	200
76·2 " 45 C. . . .	3·601	823	2,953	1·5	5·67	792	185

A. B. BOFORS—GUNS AND MOUNTINGS

Tables corrected by the Manufacturers, January, 1940.

NAVAL GUNS AND MOUNTINGS.

System	25 mm. Auto.	25 mm. double. Auto.	40 mm. Auto.	40 mm. Auto.	40 mm. double. Auto.	75 mm. Semi- Auto.	75 mm. Semi- Auto.	75 mm. double. Semi- Auto.	88 mm. Semi- Auto.	102 mm. Semi- Auto.	105 mm. Semi- Auto.	105 mm. double. Semi- Auto.
Diameter of Bore	25	25	40	40	40	75	75	75	88	102	105	105
Length of Barrel	64	64	43	60	60	40	49	60	45	50	40	50
Weight of Gun	75	75	165	220	220	430	615	1,195	1,665	2,430	1,180	2,550
Weight of Projectile	0.250	0.250	1-0	1-0	1-0	6-5	6-5	6-5	10	14	16	16
Muzzle Velocity	850	850	700	850	850	600	750	850	800	850	700	800
Range, max.	5,500	5,500	9,980	11,200	11,200	11,200	14,300	16,000	16,000	18,300	14,600	18,200
Rounds per Minute	180	360	120	120	240	30	28	50	20	15	14	25
Weight of Gun, Mounting, and Shield	570	900	900	1,600	3,100	1,410	1,775	8,300	3,550	7,590	2,950	22,100
Weight of Shield	—	—	—	—	—	240	—	—	—	—	—	4,500
Angle of Elevation	90	90	90	90	90	40	80	90	40	80	32	85
Depression	10	10	10	10	10	10	5	10	10	10	10	10

NAVAL GUNS AND MOUNTINGS—continued.

System	12 cm.	12 cm.	12 cm. double	15 cm.	15 cm.	15 cm. double	20.3 cm. double	25.4 cm. double	28 cm. double
Diameter of Bore	120	120	120	149.1	149.1	149.1	203	254	283
Length of Barrel	45	50	50	45	50	50	50	45	50
Weight of Gun	2,600	4,100	4,100	6,100	7,865	7,500	22,500	37,900	50,000
Weight of Projectile	21	24	24	46	46	46	115	225	305
Muzzle Velocity	800	900	900	835	900	900	900	850	900
Range, max.	19,300	19,500	19,500	19,600	24,500	24,500	28,000	30,300	30,000
Rounds per Minute	12	10	18	8	7	15	12	8	6
Weight of Gun, Mounting, and Shield	8,700	11,000	20,000	17,860	28,300	72,000	170,000	320,000	703,600
Weight of Shield	800	1,500	1,600	4,550	12,000	24,200	29,000	114,000	107,000
Angle of Elevation	45	30	30	30	60	60	45	45	35
Depression	10	10	10	10	10	10	5	10	8

A.B. BORDS—GUNS AND MOUNTINGS. *Howitzers and Field Guns.*

	75 mm. light Field Gun.	75 mm. Field.	75 mm. Field.	10.5 cm. Field Howr.	10.5 cm. Field.	10.5 cm. Field.	15 cm. Field Howr.	15 cm. Field.	15 cm. Field Howr.	21 cm. Field Howr.
Diameter of Bore	75	75	75	105	105	105	152.4	149.1	15	210
Length of Barrel	24	40	46	24	46	46	22	43	22	22
Weight of Gun	265	365	400	500	1,200	1,380	1,470	5,250	6,050	6,050
" Projectile	6.5	6.5	6.5	14	15.3	16.5	41	46	100	100
Muzzle Velocity	500	625	710	525	785	800	475	825	575	575
Range, max.	10,200	12,000	14,000	11,000	17,000	18,200	12,000	22,500	16,000	16,000
Rounds per Minute	25	25	25	12	10	10	8	6	3	3
Weight of Gun, Mounting and Shield	920	1,375	1,550	1,825	3,750	4,200	4,300	13,700	17,000	17,000
Angle of Elevation	50	45	45	45	45	45	45	45	60	60
" Depression	10	5	5	5	3	3	3	0	0	0

	Tank Guns.				Infantry Guns.				Mountain Howitzers.			
	37 mm.	47 mm.	37-81 mm.		47-75 mm.		37 mm.	47 mm.	75 mm.	105 mm.		
			37 mm. Barrel.	81 mm. Barrel.	47 mm. Barrel.	75 mm. Barrel.						
Diameter of Bore	37	47	37	81	47	75	37	77	75	105		
Length of Barrel	45	33	45	20	33	20	45	70	22	12		
Weight of Gun	105	105	144	4.4	130	4.5	103	196	256	290		
" Projectile	0.7	1.5	0.7	320	1.5	300	0.7	1.85	6.5	12		
Muzzle Velocity	800	560	800	6,000	560	5,400	800	750	470	300		
Range, max.	6,400	5,400	7,100	6,000	6,500	5,400	6,400	6,300	10,000	6,600		
Rounds per Minute	30	30	25	20	25	20	30	25	25	12		
Weight of Gun, Mounting and Shield	300	300	450	80	425	335	335	515	790	840		
Angle of Elevation	25	25	80	8	60	18	25	18	50	40		
" Depression	10	10	8	5	5	10	10	10	10	10		

A.B. BOFORS—GUNS AND MOUNTINGS. *Anti-Aircraft Gun.*

System	25 mm. Fixed.	25 mm. Mobile.	40 mm. Fixed.	40 mm. Mobile.	75 mm. Mobile.	75 mm. Fixed.	80 mm. Mobile.	102 mm. Fixed.	105 mm. Mobile.
	Auto.	Auto.	Auto.	Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.	Semi- Auto.
Diameter of Bore	25	25	40	40	75	75	80	102	105
Length of Barrel	64	64	60	60	60	60	50	50	50
Weight of Projectile	0.250	0.280	1.0	1.0	6.5	6.5	8	14	16
Muzzle Velocity	850	900	850	850	840	840	750	850	800
Rounds per Minute	200	200	120	120	25	25	25	15	12
Weight of Gun and Mounting	500	1100	900	2,000	5,000	3,400	5,000	7,000	10,000
Angle of Elevation	90	90	90	90	85	85	85	85	85
„ Depression	10	5	10	5	5	5	3	5	0

UNITED STATES NAVAL ORDNANCE.

GUN.	MARK.	Length in Calibres.	Total Length. Inch.	Capacity of Chamber in Cubic Inches.	Travel of Projectile in Inches.	Weight of Gun. tons.	Weight of Projectile. lb.	Weight of Charge. lb.	Muzzle Velocity. ft.-seconds.	Muzzle Energy. ft.-tons.	Penetration at Muzzle, Krupp Armor, using Capped Projectile.
1-in. A.A.	V., VI.	75	159	219	128.8	1.0	13	8.85	2700	658	3.8
3-in. S.A.	.	50	205	652	168.8	2.6	33	9.0	2500	1,480	4.6
4-in. A.A.	VII.	50	205	652	168.8	2.9	33	12.8	2800	1,794	5.3
4-in. R.F.G.	VIII.	50	205	652	168.8	2.9	33	12.8	2800	1,794	5.3
4-in. R.F.G.	.	25	..	..	..	..	..	..	..	..	..
5-in. A.A.	.	38	256	1,200	215.6	4.6	60	19.2	2700	3,032	6.2
5-in. A.A.	V., VI.	50	256	1,200	215.6	4.6	60	19.2	2700	3,032	6.2
5-in. B.L.R.	VI.	50	256	1,200	215.6	4.6	50	20.5	3000	8,122	6.4
5-in. B.L.R.	VII.	51	261	1,135	215.6	5.0	50	23.8	3150	8,439	6.8
5-in. R.F.G.	.	47	..	..	..	..	..	..	..	..	..
6-in. B.L.R.	VI.	50	300	2,101	247.5	8.3	105	30.0	2600	4,920	8.0
6-in. B.L.R.	VIII.	50	300	2,101	247.5	8.6	105	37.0	2800	5,707	8.3
6-in. B.L.R.	IX.	45	323	3,643	259.8	12.7	165	58.0	2700	8,838	9.6
7-in. B.L.R.	III., IV.	35	305	3,170	245.8	18.1	260	43.8	2100	7,948	8.6
8-in. B.L.R.	V.	40	343	5,243	279.1	18.1	260	78.0	2500	11,264	10.6
8-in. B.L.R.	VI.	45	369	5,243	279.1	18.7	260	98.5	2750	18,360	12.0
8-in. B.L.R.	V.	30	329	6,779	251.1	25.1	510	90.0	2000	14,141	10.7
10-in. B.L.R.	L, II.	40	413	10,322	327.0	34.6	510	207.5	2700	25,772	15.6
12-in. B.L.R.	III.	35	441	11,991	345.2	45.3	870	160.0	2100	26,596	14.2
12-in. B.L.R.	L, II.	40	498	17,096	392.2	52.1	870	237.5	2400	34,738	16.8
12-in. B.L.R.	III., IV.	40	493	17,096	392.2	52.1	870	305.0	2600	40,768	18.5
12-in. B.L.R.	III., IV.	45	553	16,974	452.0	52.9	870	305.0	2700	43,964	19.4
12-in. B.L.R.	V.	45	553	16,974	452.0	53.6	870	340.0	2850	48,984	20.8
12-in. B.L.R.	VI.	50	607	14,886	506.3	56.1	870	340.0	2950	52,483	21.7
12-in. B.L.R.	VII.	35	479	15,068	874.9	61.4	1180	180.0	2000	31,383	15.0
13-in. B.L.R.	L, II.	45	642	..	..	82.2	1400	385.0	2600	65,606	39.7
14-in. B.L.R.	L.	50	700	..	..	82.2	1400	..	2800	76,180	44.1
14-in. B.L.R.	II.	45	..	..	..	105.0	2100	..	2006	98,500	45.95
16-in. B.L.R.	..	50	..	..	..	130.0	2100	..	2800	114,270	51.08

MISCELLANEOUS

MEMORANDUM FROM THE GERMAN GOVERNMENT
DENOUNCING THE ANGLO-GERMAN NAVAL AGREEMENT.

(Translation.)

WHEN in the year 1935 the German Government made the British Government the offer to bring the strength of the German fleet to a fixed proportion of the strength of the naval forces of the British Empire by means of a treaty, it did so on the basis of the firm conviction that for all time the recurrence of a warlike conflict between Germany and Great Britain was excluded. In voluntarily recognising the priority of British interests at sea through the offer of the ratio 100 : 35 it believed that, by means of this decision, unique in the history of the Great Powers, it was taking a step which would lead to the establishment of a friendly relationship for all time between the two nations. This step on the part of the German Government was naturally conditional on the British Government for their part also being determined to adopt a political attitude which would assure a friendly development of Anglo-German relations.

On this basis and under these conditions was the Anglo-German Naval Agreement of the 18th June, 1935, brought into being. This was expressed in agreement by both parties on the conclusion of the agreement. Moreover, last autumn after the Munich Conference the German Chancellor and the British Prime Minister solemnly confirmed in the declaration, which they signed, that they regarded the agreement as symbolical of the desire of both peoples never again to wage war on one another.

The German Government has always adhered to this wish and is still to-day inspired by it. It is conscious of having acted accordingly in its policy and of having in no case intervened in the sphere of English interests or of having in any way encroached on these interests. On the other hand it must to its regret take note of the fact that the British Government of late is departing more and more from the course of an analogous policy towards Germany. As is clearly shown by the political decisions made known by the British Government in the last weeks as well as by the inspired anti-German attitude of the English press, the British Government is now governed by the opinion that England, in whatever part of Europe Germany might be involved in warlike conflict, must always take up an attitude hostile to Germany, even in a case where English interests are not touched in any way by such a conflict. The British Government thus regards war by England against Germany no longer as an impossibility, but on the contrary as a capital problem of English foreign policy.

By means of this encirclement policy the British Government has unilaterally deprived the Naval Agreement of the 18th June, 1935, of its basis, and has thus put out of force this agreement as well as the complementary declaration of the 17th July, 1937.

The same applies to Part III of the Anglo-German Naval Agreement of the 17th July, 1937, in which the obligation is laid down to make a mutual Anglo-German exchange of information. The execution of this obligation rests naturally on the condition that a relationship of open confidence should exist between two partners. Since the German Government to its regret can no longer regard this relationship as existing, it must also regard the provisions of Part III referred to above as having lapsed.

The qualitative provisions of the Anglo-German Agreement of the 17th July, 1937, remain unaffected by these observations which have been forced upon the German Government against its will. The German Government will abide by these provisions also in the future and so make its contribution to the avoidance of a general unlimited race in the naval armaments of the nations.

Moreover, the German Government, should the British Government desire to enter into negotiations with Germany, in regard to the future problems here arising, is gladly ready to do so. It would welcome it if it then proved possible to reach a clear and categorical understanding on a sure basis.

Berlin, April 27, 1939.

MEMORANDUM FROM HIS MAJESTY'S GOVERNMENT OF JUNE 28, 1939, REPLYING TO THE GERMAN MEMORAN- DUM DENOUNCING THE ANGLO-GERMAN NAVAL AGREEMENT.

GENERAL CONSIDERATIONS.

In their memorandum of the 27th April last the German Government state that, in making their offer in 1935 to limit themselves to a percentage of the British naval forces, they did so "on a basis of the firm conviction that for all time the recurrence of a warlike conflict between Germany and Great Britain was excluded."

2. The German Government justify their action in terminating the Anglo-German Naval Agreement of 1935, the Supplementary Declaration of 1937, and Part III of the Naval Agreement of 1937, on the ground that the attitude of His Majesty's Government in the United Kingdom showed that they now held the view that, in whatever part of Europe Germany might be involved in warlike conflict, Great Britain must always be hostile to Germany even in cases where English interests were not touched by such a conflict.

3. The question whether the attitude of His Majesty's Government can in any case justify the German Government in terminating

these instruments without, at least, previous consultation between the two Governments is dealt with hereafter. It is not the case that in whatever part of Europe Germany might be involved in warlike conflict Great Britain must always take up an attitude hostile to Germany. Great Britain could only be hostile to Germany if Germany were to commit an act of aggression against another country; and the political decisions, to which it is understood the German Government refer in their memorandum, involving guarantees by Great Britain to certain countries, could only operate if the countries concerned were to be attacked by Germany.

4. In the memorandum from the German Government the claim is made to describe British policy as a policy of encirclement. This description is without any justification, and indicates a misunderstanding and misreading of British purposes which must be corrected.

5. The action recently taken by the German Government to incorporate certain territories in the Reich, whatever may have been held by them to be the justifying reasons, has undoubtedly resulted in a great increase of anxiety in many quarters. The actions subsequently taken by the United Kingdom Government have no other purpose than to contribute to the removal of this anxiety, by assisting smaller nations to feel secure in the enjoyment of their independence, to which they have the same right as Great Britain or Germany herself. The commitments which Great Britain has recently undertaken in pursuance of this purpose are limited, and as stated above could only become effective if the countries concerned were the victims of aggression.

6. Nor have His Majesty's Government either the intention or the desire to restrict the development of German trade. On the contrary, under the Anglo-German Payments Agreement a considerable supply of free exchange has been made available to Germany for the acquisition of raw materials. This agreement is as favourable to Germany as any which has been concluded, and His Majesty's Government would look forward to further discussion of measures for the improvement of Germany's economic position, if only the essential pre-condition could be secured, namely, the establishment of mutual confidence and goodwill which is the necessary preliminary to calm and unprejudiced negotiation.

7. The consistent desire of His Majesty's Government, far from being the promotion of a war with Germany, has been and is to establish Anglo-German relations on the basis of the mutual recognition of the needs of both countries, consistently with due regard for the rights of other nations.

8. But, while for these reasons His Majesty's Government cannot agree that there has been any change in their policy or attitude which would justify the recent action of the German Government, they must add that in their view the main object of the Anglo-German Naval Agreement was to introduce an element of stability into the naval situation and to avoid unnecessary competition in armaments.

THE ANGLO-GERMAN NAVAL AGREEMENT OF 1935.

9. For this reason the Agreements contained no provision for unilateral denunciation at the instance of one of the parties alone, but clearly contemplated termination or modification only by mutual consultation—a procedure which His Majesty's Government regret that the German Government have not seen their way to adopt in the present case. The Agreement of 1935, indeed, was expressly stated to be permanent in character, and His Majesty's Government would draw the attention of the German Government to the actual terms of the Exchange of Notes of the 18th June, 1935, which constituted the Anglo-German Naval Agreement of that year, from which both the character of the Agreement and the circumstances in which its modification was contemplated are made absolutely clear.

10. In the opening Note, Sir Samuel Hoare referred to the conversations which had taken place "the primary purpose of which has been to prepare the way for the holding of a general conference on the subject of the limitation of naval armaments." He then referred to the German proposal for a ratio of 100 : 35 between the fleets of the British Commonwealth and Germany and said that "His Majesty's Government regard this proposal as a contribution of the greatest importance to future naval limitation." He expressed the belief that the Agreement would "facilitate the conclusion of a general agreement on the subject of naval limitation between all the naval Powers of the world."

11. In his reply of the same date, Herr von Ribbentrop recapitulated the terms of Sir Samuel Hoare's Note and confirmed that it correctly set forth the proposal of the German Government. He expressed the opinion that the Agreement "will facilitate the conclusion of a general agreement on this question between all the naval Powers of the world."

12. The wording of the notes thus shows clearly that the Agreement was regarded as a contribution to the solution of the problem of naval limitation. If the German Government now allege that the Agreement has a different meaning, His Majesty's Government must observe that such an allegation finds no warrant in the terms of the Agreement itself, comprehensive and detailed though they were.

13. The Agreement was equally clear on the subject of its duration. In Sir Samuel Hoare's Note it is stated to be "a permanent and definite Agreement as from to-day." Herr von Ribbentrop in his reply stated that the German Government also regarded it "as a permanent and definite agreement with effect from to-day."

14. In paragraph 2 (a) of the Notes it is stated that "the ratio of 35 : 100 is to be a permanent relationship, *i.e.*, the total tonnage of the German Fleet shall never exceed a percentage of 35 of the aggregate tonnage of the naval forces of the members of the British Commonwealth.

15. In paragraph 2 (c) of the Notes it is stated that "Germany will adhere to the ratio 35 : 100 in all circumstances, *e.g.*, the ratio

will not be affected by the construction of other Powers. If the general equilibrium of naval armaments, as normally maintained in the past, should be violently upset by any abnormal and exceptional construction by other Powers, the German Government reserve the right to invite His Majesty's Government in the United Kingdom to examine the new situation thus created." This was the only provision which contemplated any general modification (*i.e.*, apart from the special case of submarines) of the terms of the Agreement ; and it will be observed that the only condition foreseen that might entail modification was a violent disturbance of the general equilibrium of naval armaments. Moreover, under the terms of the Agreement modification could even then only take place after the situation had been examined in consultation with His Majesty's Government.

16. The German Government, however, do not maintain that such a condition in fact exists. Still less have they invited His Majesty's Government to examine the situation before taking their action. That such consultation was essential is further clear from paragraph 3 of the Notes, which states that His Majesty's Government recognised Germany's right to depart from the 35 per cent. ratio in the circumstances contemplated by paragraph 2 (c) "on the understanding that the 35 : 100 ratio will be maintained in default of agreement to the contrary between the two Governments."

17. Even if the memorandum which the German Government have now addressed to His Majesty's Government is intended to be read, not as a denunciation, but as a statement of the opinion of the German Government that His Majesty's Government have so acted as to cause the Agreement to lose its force, His Majesty's Government cannot admit that such a plea could properly be advanced without any prior consultation between the two Governments as a reason for non-compliance with the express terms of the Agreement.

THE ANGLO-GERMAN NAVAL AGREEMENT OF 1937.

18. Considerations of a similar character apply to the German action regarding Part III of the Anglo-German Naval Agreement of the 17th July, 1937. This Agreement also makes no provision for unilateral denunciation or modification apart from the special cases contemplated by the so-called "escalator clauses" which are not here relevant. Apart from these, the Agreement is expressed to "remain in force until the 31st December, 1942."

19. This Agreement is, moreover, complementary to the London Naval Treaty of 1936, to which France, Italy and the United States are also parties, and to similar agreements between His Majesty's Government and other naval Powers. All these instruments have as their object the avoidance of a useless and expensive competition in naval armaments. This may arise by one country producing special types of ships to which others feel they must reply ; or by uncertainty as to the actions and intentions of others and the suspicion that large numbers of ships are being built which must then be matched by competitive building on the part of those affected. The qualitative

limits of these agreements are therefore designed to prevent useless competition in types, and the provisions for exchange of information are designed to destroy unfounded suspicions of excessive building. Even if the relations between two countries were not good, this would not appear to His Majesty's Government to afford ground for terminating an agreement which eliminates unprofitable competition, and prevents a wasteful race in armaments which can benefit neither party.

QUALITATIVE LIMITATION.

20. It is in the light of these considerations, presumably, that the German Government desire the "qualitative provisions of the Anglo-German Agreement of the 17th July, 1937, to remain unaffected." In principle, His Majesty's Government would share this desire: but they are bound to point out that the retention of the qualitative provisions alone will not suffice to create that feeling of mutual security, to which it was the purpose of the Anglo-German Agreement to contribute, and of which the provisions for the exchange of information were the expression. His Majesty's Government would, however, at all times be ready to consider with the German Government the possibility in the words of their Notes of reaching "a clear and categorical understanding" on a sure basis.

21. From the terms in which the German Government announced their decision to retain the qualitative limits of the 1937 Agreement, it is not clear what are the exact limitations by which they consider themselves to be bound in the matter of cruisers. The qualitative limits of cruisers are fixed by Article 6 (1) of the Anglo-German Agreement of 1937 as 8,000 tons displacement with guns not exceeding 6·1-inch calibre, and it is by this limit that all signatory Powers of the London Naval Treaty of 1936 are also bound. Although Article 6 (2) of the Anglo-German Agreement of 1937 permitted Germany under certain circumstances to increase her 8-inch gun cruiser tonnage, she was in practice precluded from building more than five such cruisers by the limits of her quota under the 1935 Agreement. Now that the German Government have terminated the latter Agreement, the position with regard to cruiser limits is no longer clear, but it is presumed that the limit to which the German Government intend to adhere is that of 8,000 tons and 6·1-inch guns. The German Government are requested to confirm this assumption.

22. The past forecasts of strength at the end of 1942 and 1943 that His Majesty's Government have made to the German Government have been given solely for the purpose of implementing the provisions of the 1935 Agreement. It is clear that no further forecasts will be necessary since they were designed merely to allow Germany to make full use of her 1935 quota. But if Germany is to be no longer bound to the limit of 35 per cent. specified in the Agreement, it should be clearly understood that His Majesty's Government can no longer be bound by their past forecasts of strength, which must therefore be considered to be cancelled.

23. In the last paragraph of their memorandum the German

Government declare that they are ready to enter into negotiations in regard to future problems, if His Majesty's Government desire to do so. As indicated above, there results from the recent German action a situation which is in some respects uncertain, and an exchange of views would help to clarify it. For instance, besides the question of tonnage and gun limits for cruisers, it is desirable to know whether the German Government intend to regard themselves as bound by all the articles of the Agreement of 1937 other than those in Part III.

24. If, however, what the German Government contemplate is the negotiation of another Agreement to replace those provisions which they have now terminated, His Majesty's Government would be glad to receive some indication of the scope and purpose which the German Government would consider appropriate to such an Agreement.

25. In particular His Majesty's Government desire to know, first, when, in the German view, discussions for the conclusion of such an Agreement should take place. Secondly, His Majesty's Government desire to know how the German Government would propose to ensure that any action in the shape of denunciation or modification of the new Agreement during the terms of its validity should carry the consent of both parties.

[*The above two documents are Nos. 22 and 24 in the Blue Book Miscellaneous, No. 9 (1939).—Cmd. 6106.*]

STATEMENT ISSUED BY THE MINISTRY OF INFORMATION.

SEPTEMBER 6, 1939.

In consequence of the state of war which exists with Germany and in conformity with the provisions of Article 24 of the London Naval Treaty, 1936, and Article 24 of the Agreements with the U.S.S.R. of 1937, and with Poland of 1938, notification has been made to the foreign Governments concerned that all the obligations of His Majesty's Government in the United Kingdom under the above-mentioned Naval Disarmament Treaties have been indefinitely suspended.

[N.B.—*The text of the various notifications referred to in the above announcement was not made public.*]

[Cmd. 6176.]

ESTIMATES FOR NAVY, ARMY AND AIR SERVICES,
THE MINISTRY OF SUPPLY AND CERTAIN OTHER
SERVICES.

TREASURY MINUTE DATED 15TH FEBRUARY, 1940.

1. The Lords Commissioners of His Majesty's Treasury have had under consideration the question in what form Parliament shall be asked to make provision in 1940, and for the period of the war, for Navy, Army and Air Services, for the Ministry of Supply and for certain other services connected with the war.

2. *Navy, Army and Air Services.*—My Lords are satisfied that it is neither practicable nor desirable to present to Parliament detailed Estimates purporting to cover the whole cost of these services. It would not be practicable inasmuch as that part of the expenditure on these services directly related to the war must clearly depend on the course and progress of the war in circumstances which cannot be foreseen; equally it would not be desirable in the public interest to disclose through the Estimates the nature and extent of the war effort as envisaged at the time the Estimates were published.

The question remains whether Estimates could nevertheless be presented on a basis which would at least cover the normal peace provision, leaving any excess to be met from Votes of Credit. My Lords have come to the conclusion that this should not be attempted. It would be impossible in the circumstances of the last few years to establish what should be regarded as the normal provision and there would be little value or meaning in presenting Estimates based on the course of expenditure immediately before the outbreak of war. Moreover such normal provision would in many cases include services which have lapsed or been greatly curtailed on the outbreak of war.

There appears therefore to Their Lordships to be no satisfactory alternative to dispensing for the duration of the war with Estimates for these services in the normal form and to making provision for the whole of this expenditure under Votes of Credit. In order however that the expenditure should be accounted for in the first place under normal Defence heads and to provide the House of Commons with the usual opportunities for discussion on particular Votes it is proposed to continue to present separate Estimates for each Service under the usual Votes, each Vote being limited to a token sum of £100.

My Lords have considered whether Vote A for the Navy, Army and Air Force should be published so as to show the number of men

required for each of the Services. Having regard to the fact that vital information might thereby be disclosed to the enemy, My Lords feel that it would be preferable that the number of men should not be given and that votes should be presented asking for authority "for such numbers as His Majesty may deem necessary."

3. *Ministry of Supply, War Ministries, Civil Defence and Food Production.*—Similar considerations arise in the case of Estimates for these services and My Lords accordingly propose that the Votes to be presented for these services should be for token sums of £100 and that the expenditure should be provided for under Votes of Credit. These Estimates would provide opportunities for Parliamentary discussion and would show the sub-heads under which expenditure would be incurred and brought to account. My Lords accordingly have directed that Estimates should be drawn up on this basis for the following services :—

- Ministry of Supply.
- Ministry of Food.
- Ministry of Shipping.
- Ministry of Economic Warfare.
- Ministry of Information.
- Ministry of Home Security.
- Ministry of Health (War Services).
- Department of Health, Scotland (War Services).
- Reserve of Plant and Building Materials.
- Ministry of Agriculture and Fisheries (War Services).
- Department of Agriculture, Scotland (War Services).

The trading services of the Ministry of Food and the Ministry of Supply will not be accounted for under the Votes for these Departments but will be directly financed from and accounted for under the Vote of Credit.

4. *Information to be given to Parliament.*—A statement will shortly be presented to the House of Commons showing in detail, wherever reasons of public policy do not preclude that course, the various services for which provision is to be made in Votes of Credit, including the provision to be made for staff.

EXPENDITURE FOR NAVAL PURPOSES OF THE PRINCIPAL FOREIGN POWERS.

UNITED STATES NAVY.

Summary of estimates of appropriations for the fiscal year ending June 30, 1940,
compared with the fiscal year 1939.

Bureau or subdivision.	Appropriations 1940.	Appropriations 1939.
Bureau of Aeronautics	\$83,158,400	\$48,349,600
Marine Corps	29,959,075	27,696,830
Replacement Navy, Construction and Machinery . .	207,593,712	131,063,150
Armour and Armament	46,011,000	23,050,000
Alteration to Naval Vessels	4,000,000	—
Bureau of Supplies and Accounts	231,507,346	222,307,350
Bureau of Medicine and Surgery	2,772,270	2,637,580
Bureau of Yards and Docks	64,274,550	36,025,600
Bureau of Engineering	26,627,980	26,694,400
Bureau of Construction and Repair	24,769,979	23,642,069
Bureau of Ordnance	32,698,000	26,998,600
Bureau of Navigation	15,595,424	14,174,935
Hydrographic Office, Navy Department.	538,590	534,020
Naval Observatory	203,605	198,120
Office of Naval Records and Library	46,360	46,080
Office of Judge Advocate-General	126,620	122,000
Office of Chief of Naval Operations	76,500	72,660
Office of Director of Naval Communications . . .	142,000	135,200
Office of Naval Intelligence	80,000	79,180
Board of Inspection and Survey	20,560	19,840
Office of the Secretary	2,847,180	2,625,330
Total Trust Funds	(a)	2,235,000
TOTAL	773,049,151	588,707,544

(a) No figures available.

ESTIMATES, 1940.

N.B. No estimates have been published by belligerent Powers, nor is any information available from Italy, Japan, or U.S.S.R. at the time of going to press. It is thus impossible to give any further figures under this heading.

BRITISH AND FOREIGN NAVIES.

PRINCIPAL OFFICIALS.

GREAT BRITAIN.

First Lord.—The Right Honourable Winston S. Churchill, C.H., M.P.

First Sea Lord and Chief of Naval Staff.—Admiral of the Fleet Sir Dudley Pound, G.C.B. G.C.V.O.

Second Sea Lord and Chief of Naval Personnel.—Admiral Sir Charles Little, K.C.B.

Third Sea Lord and Controller.—Rear-Admiral B. A. Fraser, C.B., O.B.E.

Fourth Sea Lord and Chief of Supplies and Transport.—Rear-Admiral Geoffrey S. Arbuthnot, C.B., D.S.O.

Fifth Sea Lord and Chief of Naval Air Services.—Vice-Admiral Guy C. C. Royle, C.B., C.M.G.

Deputy Chief of Naval Staff.—Vice-Admiral Tom S. V. Phillips, C.B.

Parliamentary and Financial Secretary.—Geoffrey Shakespeare, Esq., M.P.

Civil Lord.—Captain Austin Hudson, M.P.

Controller of Merchant Shipbuilding.—Sir James Lithgow, Bart., M.C.

Permanent Secretary.—Sir Richard Henry Archibald Carter, K.C.B., K.C.I.E.

FOREIGN POWERS.

Country.	Minister of Marine.	Chief of Staff.
Argentina . . .	Vice-Admiral Leon Scasso	
Brazil . . .	Vice-Admiral Henrique Aristides Gullenhem	Vice-Admiral J. M. Castro e Silva
Chile . . .	Don Emilio Bello Codecido (Minister of National Defence), Vice-Admiral Julio Allard (Director General of the Navy)	—
China . . .	Admiral Chen Shao-Kwan (Minister of Naval Affairs)	Vice-Admiral Chen Hslesn-Yung (Vice Minister)
Colombia . . .	—	—
Cuba . . .	—	—
Denmark . . .	Vice-Admiral H. Rechnitzer (Chief of Naval Defence and Director of the Naval Ministry)	Commodore C. Hammerich
Ecuador . . .	Colonel Benigno Andrade Flores (Minister of Defence)	General Enrique Bariga (Commanding Naval Forces)
Estonia . . .	General Lill (Minister of Defence)	General N. Reek
Finland . . .	J. Niukkanen (Minister of Defence)	Rear-Admiral Lundmann
France . . .	Mon. Cesar Campinchi	Amiral de la Flotte J. L. X. F. Darlan.
Germany . . .	Adolf Hitler (Supreme Commander of the Armed Forces)	General-Admiral Dr. Raeder (Commander-in-Chief of the Navy)
Greece . . .	J. Paparassiliou	Rear-Admiral A. Sakellariou
Hungary . . .	Rear-Admiral O. R. Wulff (Inspector General)	—
Italy . . .	Signor Benito Mussolini	Ammiraglio di Armata D. Cavagnari
Japan . . .	Vice-Admiral Zengo Yoshida	H.I.H. Prince Hiroyasu Fushimi, G.C.V.O.
Latvia . . .	General Balodis (Minister of War)	Captain Spade (Chief of Naval Forces)
Lithuania . . .	Colonel Stasys Dirnantas (Minister of National Defence)	—
Mexico . . .	General Quiroga (Minister of War and Marine)	Rear-Admiral O. P. Blanco
Netherlands . . .	Mon. Van Dijk (Minister of Defence)	Vice-Admiral J. T. Fürstner
Norway . . .	Colonel Birger Ljungberg (Minister of Defence)	Rear-Admiral H. E. Diesén (C.-in-C.
Paraguay . . .	Commander D. Manuel Aponte (Director of Marine Dept.)	Lieut.-Commander Ramon Martino (Director General of the Navy)
Peru . . .	Captain Rocque Saldias (Minister of Marine and Aviation)	Captain Fredrico Diaz Dulanto
Poland . . .	Rear-Admiral J. Swirski (Chief of Polish Navy)	—
Portugal . . .	Lieut.-Commander M. O. Bettencourt	Vice-Admiral J. A da Matta Oliveira
Rumania . . .	—	Captain I. Georgescu
Soviet Union . . .	Flagman Kuznetsoff (People's Commissar)	Flagman L. M. Galler
Spain . . .	Admiral Cervera	Vice-Admiral Francisco Bastivleche

Country.	Minister of Marine.	Chief of Staff.
Sweden . . .	T. E. Sköld (Secretary of State for Swedish Defence Forces)	Admiral C. F. Tamm
Thailand . . .	Luang Bipul (Minister of Defence)	Rear-Admiral Luang Sindhu
Turkey . . .	Captain Hümmü Kokdenizer (Under-Secretary for the Navy)	Captain Safyeddin Dagada
United States .	C. Edison (Secretary of the Navy)	Admiral Harold R. Stark (Chief of Naval Operations)
Uruguay . . .	General Domingo Mendivil (Minister of War and Marine)	Captain Gustavo Schroeder (Inspector General of Marine)
Venezuela . .	Commander Lavazaval (Head of the Navy)	—
Yugoslavia . .	Army General M. D. Nedić (Army and Navy Ministry)	Rear-Admiral T. T. Tijanić

BRITISH AND FOREIGN NAVAL ATTACHÉS.

BRITISH NAVAL ATTACHÉS ACCREDITED TO FOREIGN COUNTRIES.

To.	Name.	Appointed.	Headquarters.
Argentina, Brazil, Uruguay, Venezuela	Captain H. W. U. McCall . Assistants, Commander D. S. McGrath	Nov. 12, 1938 Aug., 1939	Buenos Aires. Rio di Janeiro.
	Lieutenant C. H. Pullen, R.N.V.R.	Oct. 7, 1939	"
Chile, Peru, Ecuador .	Captain S. H. T. Arliss . Assistant, Lieutenant-Com- mander F. V. Vaughan, R.N.V.R.	Apr. 22, 1938 Sept. 3, 1939 Aug. 25, 1939	Santiago. " " Copenhagen.
Denmark	Captain H. M. Denham .	Sept. 3, 1939	Helsinki.
Finland	Captain N. C. Moore, D.S.O., M.V.O.	Jan. 17, 1938	Paris.
France	Captain C. S. Holland . . Assistant, Commander A. G. Cunard.	Aug. 31, 1939	"
Belgium, Netherlands	Vice-Admiral Sir Gerald C. Dickens, K.C.V.O., C.B., C.M.G.	Feb. 8, 1940	The Hague.
	Assistant, Lieutenant F. W. H. Loudon, R.N.V.R. .	Aug. 25, 1939	"
Greece, Bulgaria . .	Captain H. F. Nalder . . Assistant, Lieutenant Sir T. Blomefield, Bart., R.N.V.R.	Aug. 26, 1939 Dec., 1939	Athens. "
Italy, Albania . . .	Rear-Admiral R. H. L. Bevan, D.S.O., M.V.O. . Assistant, Lieutenant-Com- mander the Hon. G. C. R. Rodd, R.N.V.R.	Feb. 23, 1940 Feb. 19, 1940	Rome.
Japan, China . . .	Captain D. N. C. Tufnell, D.S.C.	Dec. 17, 1938	Tokyo.
	Assistant, Commander (E.) G. F. Fellowes	July 20, 1939	"
Norway, Sweden . .	Rear-Admiral H. Boyes, C.M.G., C.I.E.	Aug. 24, 1939	Oslo.
	Assistant, Commander J. R. Poland	Oct. 31, 1939	Stockholm.
Portugal, Spain . .	Commander H. D. Owen . Assistants, Lieutenant F. Stilwell, R.N.V.R. . . .	Oct. 8, 1938 Dec., 1939	Lisbon. "
	Commander A. H. Hill- garth, O.B.E.	Aug. 30, 1939	Madrid.
	Lieutenant G. Beare, R.N.V.R.	Nov., 1939	"
Thailand	Commander L. N. Brown- field (S.O. (O.), Singapore)	Jan. 25, 1939	Bangkok (non- resident).
Turkey	Captain G. E. M. O'Donnell, D.S.O.	July 6, 1939	Ankara.
U.S.A., Mexico, Panama, Cuba . .	Captain L. C. A. St. J. Cur- zon-Howe, M.V.O., . . . Assistant, Commander (E.) F. J. A. Coleby	May 28, 1938 Oct. 1, 1937 Oct. 24, 1936	Washington. " Moscow.
U.S.S.R., Latvia, Lithuania, Estonia Yugoslavia, Rumania	Captain H. Clanchy . . . Captain M. C. Despard, D.S.C.	Oct., 1939	Bucharest.

FOREIGN NAVAL ATTACHÉS ACCREDITED TO GREAT BRITAIN.

- Argentina : Captain Jose S. Zuloaga.
 Brazil : (Naval Agent) Engineer-Captain Natal Arnaud.
 China : Captain Lung Yung hsien.
 Denmark : Baron Niel Juel-Brockdorff.
 Finland : Captain Holger Grondahl.
 France : Captain C. L. M. C. Denis de Rivoyre
 Ingenieur Principal J. R. Chalopin }
 Lieut. L. Bedin } Assistant Naval Attachés.
 Greece : Captain S. Mateszis.
 Italy : Captain Count Ferrante Capponi.
 Engineer-Lieutenant-Commander Ernesto Trenchi (Assistant).
 Japan : Captain Taiichiro Kondo.
 Commander M. Yoshii (Assistant).
 Netherlands : Lieut.-Commander A. de Booy.
 Poland : Captain Tadewsz Stoklasa.
 Rumania : Captain Gheorghe St. Dunsitrescu, C.V.O.
 Soviet Union :
 Sweden : Kom-Kapten N. J. Westrom.
 Thai : Colonel Mom Snidvongse Senni.
 Turkey : Commander Siret Cakir.
 United States : Captain Alan G. Kirk.
 Captain G. W. Nelson, (C.C.) }
 Commander N. R. Hitchcock } Assistants.
 Lieut.-Commander W. B. Ammon. }
 Yugo-Slavia : Brigadier-General Milroad Radović.

BRITISH SHIPBUILDING FIRMS.

THE firms listed below all undertake the building of merchant vessels. Those which undertake in addition the construction of (a) Men-of-war, (b) Propelling machinery and (c) Auxiliary machinery for ships, are so distinguished.

- Ailsa Shipbuilding Co., Ltd., Troon, Ayrshire. (a) (b)
 Ardrossan Dockyard, Ltd., Ardrossan, Ayrshire.
 S. P. Austin and Son, Ltd., Wear Dock Yard, Sunderland. (a)
 Barclay, Curle and Co., Ltd., Whiteinch, Glasgow. (a) (b)
 Bartram and Sons, Ltd., South Dock, Sunderland.
 George Brown and Co., Greenock.
 John Brown and Co., Clydebank. (a) (b)
 Burntisland Shipbuilding Co., Ltd., Burntisland.
 Caledon Shipbuilding and Engineering Co., Ltd., Dundee. (a) (b)
 Cammell Laird and Co., Ltd., Birkenhead. (a) (b) (c)
 Cochrane and Sons, Ltd., Selby, Yorks.
 William Denny and Brothers, Ltd., Dumbarton. (a) (b)
 William Doxford and Sons, Ltd., Sunderland. (a) (b)
 Fairfield Shipbuilding and Engineering Co., Ltd., Govan, Glasgow.
 (a) (b)
 Ferguson Brothers (Port Glasgow), Ltd., Port Glasgow. (a) (b) (c)
 Fleming and Ferguson, Ltd., Paisley. (b)
 Furness Shipbuilding Co., Ltd., Haverton-on-Tees.
 Goole Shipbuilding and Repairing Co., Ltd., Goole. (a)
 Grangemouth Dockyard Co., Ltd., Grangemouth.
 William Gray and Co., Ltd., West Hartlepool. (a) (b) (c)
 Greenock Dockyard Co., Ltd., Greenock.
 Hall, Russell and Co., Ltd., Aberdeen. (b)
 William Hamilton and Co., Ltd., Port Glasgow. (a)
 Harland and Wolff, Ltd., Belfast and Govan, Glasgow. (a) (b) (c)
 R. and W. Hawthorn, Leslie and Co., Ltd., Newcastle-on-Tyne.
 (a) (b) (c)
 Charles Hill and Sons, Ltd., Bristol.
 A. and J. Inglis, Ltd., Pointhouse, Glasgow. (a)
 Irvine's Shipbuilding and Dry Docks Co., Ltd., Hartlepool. (c)
 Sir James Laing and Sons, Ltd., Sunderland.
 John Lewis and Sons, Ltd., Aberdeen. (b)
 Lytham Shipbuilding and Engineering Co., Ltd., Lytham, Lancs.
 (a) (b)
 Philip and Son, Ltd., Dartmouth. (a) (b)
 Sir John Priestman and Co., Sunderland.
 John Readhead and Sons, Ltd., South Shields. (b)

Henry Robb, Ltd., Leith. (a)
 Rose Street Foundry and Engineering Co., Ltd., Inverness. (b) (c)
 Scott and Sons, Bowling, near Glasgow.
 Scotts' Shipbuilding and Engineering Co., Ltd., Greenock. (a) (b)
 Short Brothers, Ltd., Sunderland.
 William Simons and Co., Ltd., Renfrew, near Glasgow. (a) (b)
 Smith's Dock Co., Ltd., North Shields. (b)
 Alexander Stephen and Sons, Ltd., Linthouse, Govan, Glasgow. (a)
 Swan, Hunter and Wigham Richardson, Ltd., Wallsend-on-Tyne.
 (a) (b) (c)
 Joseph L. Thompson and Sons, Ltd., Sunderland.
 John I. Thornycroft and Co., Ltd., Woolston, Southampton. (a)
 (b) (c)
 Vickers-Armstrongs, Ltd., Barrow-in-Furness and High Walker,
 Newcastle-on-Tyne. (a) (b) (c)
 J. Samuel White and Co., Ltd., Cowes, Isle of Wight. (a) (b) (c)
 Wood, Skinner and Co., Ltd., Bill Quay, Pelaw, Co. Durham.
 Yarrow and Co., Ltd., Scotstoun, Glasgow. (a) (b) (c)

BOAT-BUILDERS.

In addition to the shipbuilding firms listed above, the following firms undertake the construction of men-of-war's boats or power-driven boats for combatant purposes.

Aldous Successors, Ltd., Brightlingsea, Essex.
 Boats and Cars (Kingston), Ltd., Kingston-on-Thames.
 British Power Boat Company, Hythe, Southampton.
 Brooke Motor Craft Co., Ltd., Harbour Road, Oulton Broad,
 Lowestoft.
 Camper and Nicholson, Gosport.
 Clare Lallow, Cowes, Isle of Wight.
 Walter Cook, Maldon, Essex.
 Groves and Guttridge, Clarence Road, Cowes, Isle of Wight.
 Hamble River Yacht and Engineering Co., Swanwick Shore, near
 Southampton. (Now owned by Solent Shipyard Co., Ltd.,
 Bursledon, Hants.)
 Hugh McLean and Sons, Ferry Road, Renfrew.
 Mechans, Ltd., Scotstoun Ironworks, Glasgow.
 Medway Yacht Basin, Rochester.
 J. H. Pounder and Co., Throston Bridge, Hartlepool.
 Rowhedge Ironworks, Ltd., Rowhedge, near Colchester.
 A. Rutherford and Co., Ltd., Birkenhead.
 Saunders Roe, Ltd., Cowes, Isle of Wight.
 Sittingbourne Shipbuilding Co., Ltd., 97, Park Road, Sittingbourne,
 Kent.
 J. Taylor (Chertsey), Ltd., Chertsey, Surrey.
 Vosper, Ltd., Portsmouth.
 White's Southampton Yachtbuilding and Engineering Co., Ltd.,
 Itchen, Southampton.

FIRMS MANUFACTURING MILITARY AIRCRAFT.

The following are the principal constructors of military aircraft :

Aeronautical Corporation of Great Britain, Walton Works, Peterborough.

Airspeed (1934), Ltd., The Airport, Portsmouth, Hants.

Sir W. G. Armstrong Whitworth Aircraft, Ltd., Whitley, near Coventry.

Blackburn Aircraft, Ltd., Brough, E. Yorks.

Boulton Paul Aircraft, Ltd., The Airport, Wolverhampton.

Bristol Aeroplane Co., Ltd., Filton, Bristol.

British Aircraft Manufacturing Co., Ltd., Hanworth Aerodrome, Middlesex.

Cierva Autogiro Co., Ltd., Bush House, W.C.2.

De Havilland Aircraft Co., Ltd., Hatfield Aerodrome, Hertfordshire.

Fairey Aviation Co., Ltd., Hayes, Middlesex.

General Aircraft, Ltd., London Air Park, Feltham.

The Gloster Aircraft Co., Ltd., 3, St. James's Square, S.W.1.

Handley Page, Ltd., 40, Claremont Road, Cricklewood, N.W.2.

Hawker Aircraft, Ltd., Canbury Park Road, Kingston-on-Thames.

Heston Aircraft Co., Ltd., Heston Airport, Hounslow.

Parnall Aircraft Co., Ltd., Yate, Bristol.

Percival Aircraft, Ltd., 20 Grosvenor Place, S.W.1.

Phillips and Powis Aircraft, Ltd., Reading Aerodrome, Woodley, Reading.

A. V. Roe and Co., Ltd., Newton Heath, Manchester.

Saunders-Roe, Ltd., East Cowes, Isle of Wight.

Short Bros. (Rochester and Bedford), Ltd., Rochester, Kent.

Supermarine Aviation Works (Vickers), Ltd., Vickers House, Broadway, Westminster, S.W.1.

Vickers (Aviation), Ltd., Weybridge, Surrey.

Westland Aircraft, Ltd., Yeovil, Somerset.

PICTORIAL SECTION

Comprising

SILHOUETTES OF WARSHIPS

PLANS AND ELEVATIONS OF WARSHIPS

**PROFILES OF
BRITISH AND FOREIGN WARSHIPS**

CAPITAL SHIPS.

[In order to facilitate identification, the ships are arranged in accordance with the number of funnels and masts, as these are the features most easily distinguished at a distance. Dimensions and particulars of British and foreign warships will be found on pp. 141-186. All the profiles are drawn to the scale $\frac{1}{4}$ in. = 100 ft.]

[Indexes to the names of vessels of which profiles are included in this section are given at the end of the volume.]



SWEDEN. Battleship. Oscar II.
(A searchlight is fitted on each mast.)



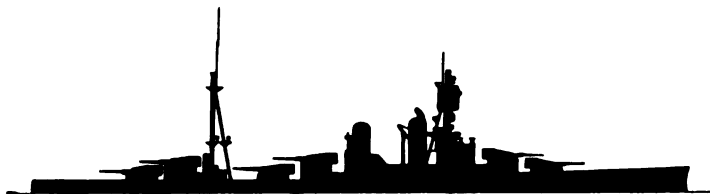
GREAT BRITAIN. Battle-cruiser. Hood.
(Fore topgallant mast has been added and bridge structure modified.)



GREAT BRITAIN. Battle-cruiser. Repulse (after reconstruction 1936).
Renown similar.
Fore topmast removed.



JAPAN. Battleships. Mutsu, Nagato.
Single funnel fitted and catapult added between mainmast and "X" turret.
Superstructure built round mainmast.
Bridgework modified.
Main topgallant mast removed.



JAPAN. Battleships. Ise, Hyuga.
 Fore funnel and topmast removed.
 Bridgework modified.
 Superstructure built round mainmast.
 Main topgallant mast removed.



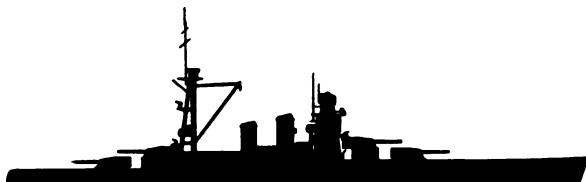
JAPAN. Battleships. Haruna, Kirishima, Kongo.
 Haruna and Kongo have funnels of equal height.
 Derricks fitted between X and Y turrets.



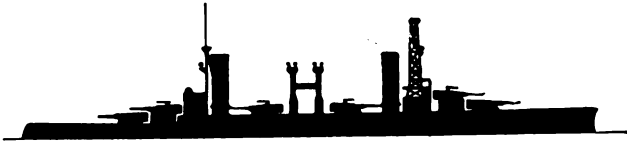
CHILE. Battleship. Almirante Latorre.
 (Modernised 1931—mainmast raised and bridge work altered.)
 Catapult fitted on quarter deck.



UNITED STATES. Battleships. California, Colorado, Maryland, Tennessee, West Virginia.
 (Now fitted with 2 catapults, one on "X" turret and one on the quarter deck.)
 Crane fitted at stern.
 Maryland has range-finder fitted on B turret.



ITALY. Battleships. Conte di Cavour, Giulio Cesare.
 Andrea Doria Carlo Duilio when modernised.



ARGENTINA. Battleships. Moreno, Rivadavia.

Guns on B and X turrets replaced by range-finders.



FRANCE. Battleships. Bretagne, Lorraine, Provence.

NOTE.—Lorraine has been modernised. The midships turret has been removed and replaced by a hangar and catapult. Cranes fitted abreast after funnel. Bridgework extended. Fore topmasts removed, main topmasts fitted.



FRANCE. Battleships. Courbet, Paris.

Cranes fitted abreast after funnel.
After funnel reduced in height.



BRAZIL. Battleships. Minas Geraes, São Paulo.

Minas Geraes has forward funnel removed and bridgework modified.
Remaining funnel made larger.



SOVIET UNION. Battleships. Marat, Paris Commune and October Revolution.

Two derricks fitted between mainmast and turret in Marat and Paris Commune.
Crane fitted abreast mainmast in October Revolution.

CAPITAL SHIPS.



TURKEY. Battle-cruiser. Yavuz Sultan Selim.



GREAT BRITAIN. Battleships. Nelson, Rodney.

Nelson has a crane amidships.
Rodney has a catapult fitted on C turret.
Mast structure increased.



FRANCE. Battleships. Dunkerque, Strasbourg.

Catapult fitted on quarter deck. Crane is moved aft to break of deck.
Main topgallant mast fitted.

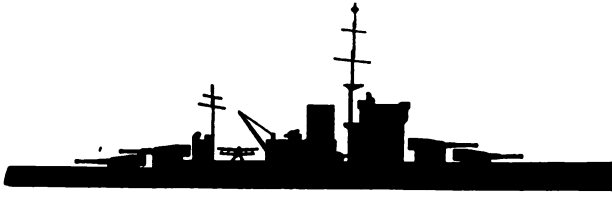


JAPAN. Battleships. Fuso and Yamashiro.
(After reconstruction, 1934.)



GREAT BRITAIN. Battleships. Barham, Malaya.

NOTE.—Barham has tripod mainmast and catapult on "X" turret.
Barham and Malaya have tall mainmasts and no fore topmasts.
Malaya has catapult before mainmast; Derrick on mainmast removed;
Hangar and cranes fitted abreast funnel.
Sternwalk fitted in Barham.



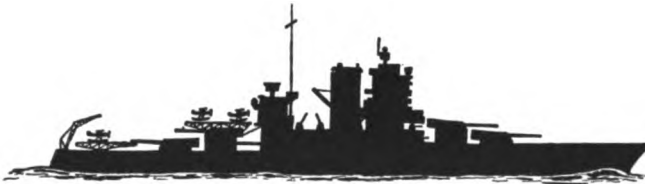
GREAT BRITAIN. Battleships. Warspite, Queen Elizabeth, Vallant.
 NOTE.—Queen Elizabeth and Vallant are under reconstruction.
 Sternwalks fitted in Warspite and Queen Elizabeth.



UNITED STATES. Battleships. New York, Texas.
 Fore topmast removed; Mastheads modified and fitted with machine-guns.
 Range-finder fitted on B and X turrets.



GREAT BRITAIN. Battleships. Ramillies, Resolution, Revenge, Royal Sovereign.
 NOTE.—Resolution has a smoke deflector on the funnel. Ramillies and Resolution have tripod mainmasts, a catapult on "X" turret and a crane abreast mainmast.
 Main topgallant mast fitted.



UNITED STATES. Battleships. Idaho, Mississippi, New Mexico.
 (After modernisation, 1934.)



UNITED STATES. Battleships. Arizona, Pennsylvania.
 Catapult on "X" turret added. Crane fitted at stern. Main topmast is on fore side of mast structure.



UNITED STATES. Battleships. Nevada, Oklahoma.
 Bridgework extended and mastheads modified.



UNITED STATES. Battleship. Arkansas.



GERMANY. Armoured Ship. Admiral Scheer.



GERMANY. Armoured Ship. Deutschland.
 Pole mast fitted on aft side of funnel. Catapult fitted abaft funnel.
 Fore topmast fitted.
 Pole mast fitted on after superstructure.



GERMANY. Battle Cruisers. Scharnhorst, Gneisenau.
 Gneisenau has a vertical stempiece.

AIRCRAFT AND SEAPLANE CARRIERS AND TENDERS.



GREAT BRITAIN. Aircraft Carrier. Eagle.
Fore topmast added and mast structure modified.
Signal mast added forward.



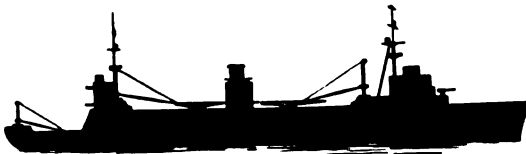
SWEDEN. Aircraft Cruiser. Gotland.



GREAT BRITAIN. Aircraft Carrier. Hermes.
Topmast and signal mast forward added. Flight deck extended aft.



FRANCE. Aircraft Carrier. Béarn.
Space between flight deck and upper deck forward partially blanked off.
Framework fitted on aft side of funnel.



FRANCE. Aviation Transport. Commandant Teste.



GREAT BRITAIN. Seaplane Carrier. Albatross.
Catapult fitted forward.



UNITED STATES. Aircraft Carriers. Saratoga, Lexington.
Lexington has platform round top of funnel.



UNITED STATES. Aircraft Carriers. Enterprise, Yorktown.



GREAT BRITAIN. Aircraft Carrier. Glorious.

NOTES.—The flight deck has been lengthened aft, and now extends to the stern.
The quarter deck has also been raised a deck.
Tripod mast added before funnel.
Three wireless masts added each side of flight deck.



GREAT BRITAIN. Aircraft Carrier. Ark Royal.



JAPAN. Aircraft Carrier. Hesho.
Funnels hinge outboard.



GREAT BRITAIN. Aircraft Carrier. Furious.
Three wireless masts added each side of flight deck.
Quarter deck has been raised one deck.
Platform built on flight deck forward.



JAPAN. Aircraft Carrier. Akagi.
Superstructure added and flight deck extended forward.

AIRCRAFT CARRIERS.



JAPAN. Aircraft Carrier. Kaga.

Superstructure added and flight deck extended forward.



UNITED STATES. Aircraft Carrier. Ranger.

(NOTE.—Funnels hinge outboard.)
Signal masts fitted at ends of flight deck.



GREAT BRITAIN. Aircraft Carrier. Argus. (Training Ship.)

Flight deck levelled forward.



JAPAN. Aircraft Carrier. Ryujo.



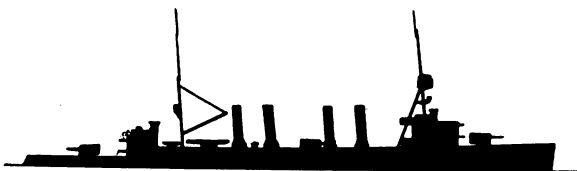
UNITED STATES. Aircraft Tender. Langley.

Foremost third of flight deck removed.
Two pole masts fitted.

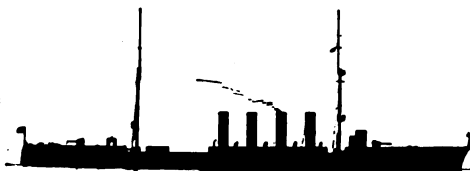
CRUISERS AND COAST DEFENCE SHIPS.



JAPAN. Cruisers. ("Sendai" class.) Naka, Sendai, Jintsu.
Catapult fitted abaft mainmast. Aircraft platform forward removed.
The mainmast is of tripod construction and is fitted with a derrick on its after side.



UNITED STATES. Scout Cruisers. ("Omaha" class.) Cincinnati, Concord, Detroit, Marblehead, Memphis, Milwaukee, Omaha, Raleigh, Richmond, Trenton.
There are small differences in the arrangement of guns aft.
Topmasts shortened.



JAPAN. Cruisers. ("Chikuma" class.) Hirado, Yahagi. (Training Ships.)



ROYAL AUSTRALIAN NAVY. Cruiser. Adelaide.



ITALY. Armoured Cruiser. (Classified as Battleship, 2nd class, in Italian official lists.) San Giorgio.



ITALY. Light Cruiser. Taranto (ex-German Strassburg).

CRUISERS.



GREAT BRITAIN. Cruisers. ("London" class.) Devonshire, London, Shropshire, Sussex. ("Norfolk" class.) Dorsetshire, Norfolk.
Fore topgallant mast added.



GREAT BRITAIN. Cruisers. ("Kent" class.) Cumberland, Suffolk, Kent, Berwick, Cornwall.
Kent has a sternwalk.
Kent, Berwick and Cornwall are flush-decked.
Royal Australian Navy. Cruisers. ("Kent" class.) Australia, Canberra.
No hangars fitted.



GREAT BRITAIN. Cruisers. ("E" class.) Emerald, Enterprise.
(In Enterprise the forward 6-in. guns are in a twin mounting on the fore-castle deck.)



JAPAN. Light Cruisers. ("Kuma" class.) Kiso, Kitakami, Kuma, Oi, Tama.
("Natori" class.) Isuzu, Natori, Nagara, Yura, Kinu, Abukuma.
Catapult fitted before mainmast. The mainmast is of tripod construction and is fitted with a derrick on its fore side.



SOVIET UNION. Cruisers. Profintern, Chervonnaya, Ukraina.



JAPAN. Light Cruisers. ("Tenryu" class.) Tatsuta, Tenryu.



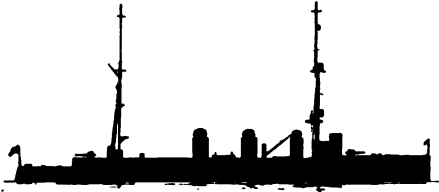
SPAIN. Light Cruiser. Mendez Nuñez.

Foremast is tripod. Fore topgallant mast added.
A.A. armament fitted between second funnel and mainmast.
Searchlight platform fitted round after funnel.



SPAIN. Light Cruiser. Navarra (Ex Republica).

One funnel and masts removed. Tower built forward and superstructure aft.
Upper deck extends farther aft. Another gun added forward.
A.A. armament fitted amidships.



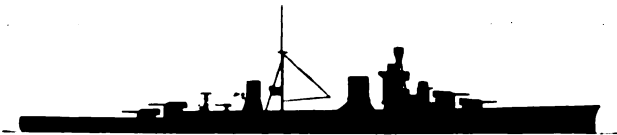
ITALY. Scout Cruiser. Quarto.



JAPAN. Cruisers. ("Nachi" class.) Nachi, Myoko, Ashigara, Haguro.
Catapult fitted abaft mainmast.



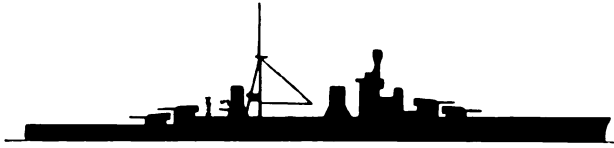
JAPAN. Cruisers. ("Takao" class.) Takao, Atago, Chokai, Maya.



ITALY. Cruiser. (Modified "Trento" class.) Bolzano.

Forward superstructure faired into funnel. Catapult fitted amidships.
Clinker screens fitted to funnels.

CRUISERS.



ITALY. Cruisers. ("Zara" class.) Pola, Zara, Flume, Gorizia.
Forward superstructure faired into funnel. Catapult fitted forward.
Clinker screens fitted to funnels.



JAPAN. Cruisers. ("Furutaka" class.) Furutaka, Kato.
The tops of the funnels are square to the funnels.
Pole mast raked.



JAPAN. Cruisers. ("Furutaka" class.) Aoba, Kinugasa.
The tops of the funnels are square to the funnels.
Pole mast raked.



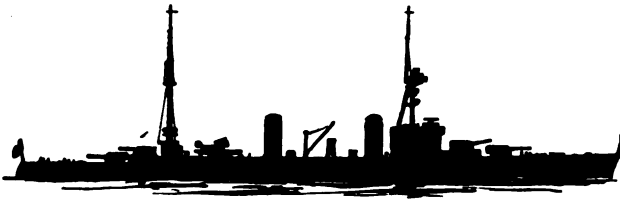
GREAT BRITAIN. Cruisers. (Improved "Birmingham" class.) Effingham, Frobisher, Hawkins, Vindictive.
Vindictive is used as a training ship, the raised gun forward is removed and a hangar fitted forward of the bridge. Seaplane crane fitted aft of mainmast.
Effingham, Hawkins and Frobisher are being rearmed, the after funnel being removed. Crane fitted amidships and another gun added forward and aft.



GREAT BRITAIN. Cruisers. (Improved "Southampton" class.) Belfast, Edinburgh.



GREAT BRITAIN. Cruisers. ("Southampton" class.) Southampton, Newcastle, Sheffield, Birmingham, Glasgow, Gloucester, Liverpool, Manchester.



FRANCE. Cruisers. ("Duquesne" class.) Duquesne, Tourville. ("Suffren" class.) Suffren, Colbert, Foch, Dupleix.

Colbert, Dupleix and Foch have tripod mainmasts and the catapults between the funnels.

Fore topmast shortened in Foch, Duquesne and Tourville and removed in Dupleix.



UNITED STATES. Cruisers. ("Astoria" class.) Astoria, New Orleans, Minneapolis, San Francisco, Tuscaloosa.



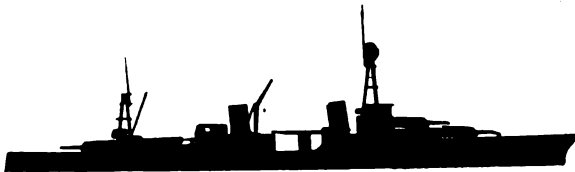
UNITED STATES. Cruisers. Portland, Indianapolis.

Foremost funnel and fore topmast are raised.



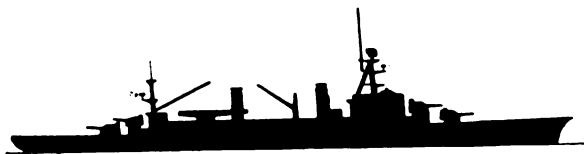
UNITED STATES. Cruisers. ("Pensacola" class.) Salt Lake City, Pensacola.

Crane fitted on fore side of after funnel and derricks on after side.



UNITED STATES. Cruisers. ("Chester" class.) Northampton, Chester, Louisville. ("Augusta" class.) Chicago, Houston, Augusta.

Foremost funnel raised and fore topmast shortened in Chester, Louisville and Northampton. Fore topmast shortened.



FRANCE. Training Cruiser. Jeanne d'Arc.
The catapults and fore topmast are removed.



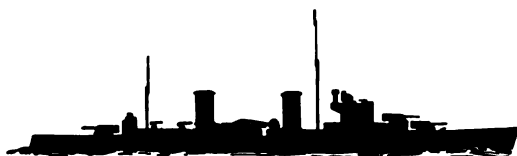
FRANCE. Cruisers. Jean-de Vienne, La Galissonnière, Marcellin, Gloire, Montcalm, Georges Leygues.



GREAT BRITAIN. Cruisers. York, Exeter. ("York" class.)
(In Exeter the funnels and masts are vertical.)
Forward funnel has been modified.



COMMONWEALTH OF AUSTRALIA. Cruisers. (Modified "Leander" class.)
Perth, Hobart, Sydney.



GREAT BRITAIN. Cruisers. ("Arethusa" class.) Arethusa, Galatea, Penelope, Aurora.
Derrick fitted on aft side of after funnel.



GERMANY. Light Cruisers. Köln, Karlsruhe, Königsberg.
Polemast fitted on aft side of after funnel. Catapult fitted between funnels.



FRANCE. Cruiser Minelayer. Emile Bertin.
 Derrick fitted on fore side of catapult.
 Searchlight platform built round after funnel.
 Small mast fitted on fore side of after turret.



ITALY. Cruisers. ("Condottieri" class.) Montecuccoli, Muzio Attendolo.



ITALY. Cruisers. ("Attendolo" class.) Eugenio di Savoia, Filiberto Duca d'Aosta.



ITALY. Cruisers. ("Condottieri" class.) Alberico de Barbiano, Alberto di Giussano, Bartolomeo Colleoni, Giovanni della Bande Nera.
 Fore topmast and stays to mainmast removed.
 Derrick fitted on fore side of mainmast. Bridgework extended.



ITALY. Cruisers. ("Condottieri" class.) Armando Diaz, Luigi Cadorna.
 Fore topmast removed. Catapult fitted between after funnel and "X" turret.
 Derrick fitted on fore side of mainmast.



GREAT BRITAIN. Cruiser Minelayer. Adventure. (Stern has been extended.)
 Derricks added abreast masts.



NETHERLANDS. Cruisers. Java, Sumatra.

Fore topmast shortened and foremast made larger.
Mainmast shortened, moved forward and fitted with derrick and searchlights.
Aircraft stowed between funnels and crane fitted.



ITALY. Cruisers. ("Trento" class.) Trento, Trieste.

Fore topmast removed.



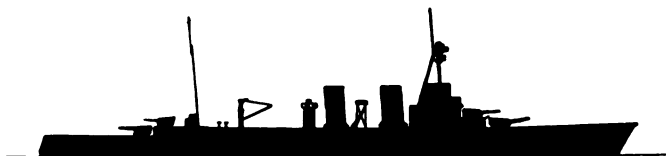
SPAIN. Cruisers. Libertad, Almirante Cervera, Miguel de Cervantes.

The mainmasts are tripods.
Main topgallant mast fitted. Fore topmast and topgallant mast removed.



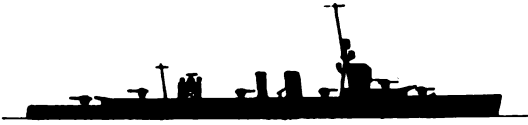
GERMANY. Light Cruiser. Emden.

Pole mast fitted on aft side of after funnel.
Superstructure added before mainmast. Fore topmast shortened.



FRANCE. Cruisers. ("Duguay-Trouin" class.) La Motte Picquet, Duguay-Trouin, Primauguet.

Catapult fitted on quarter deck.
Fore topmast removed and mast head modified.



GREAT BRITAIN. Cruisers. ("D" class.) Danae, Dauntless, Dragon.
Main topmast added.



GREAT BRITAIN. Cruisers. ("D" class: repeat vessels.) Delhi, Dunedin, Diomedé,
Despatch, Durban.
Foremost gun in Diomedé is housed in a gunhouse.



GREAT BRITAIN. Cruisers. ("Ceres" class.) Cardiff, Ceres, Curacao.
For Coventry and Curlew, see below.



GREAT BRITAIN. Anti-Aircraft Cruisers. ("Ceres" class.) Coventry, Curlew (as re-
armed 1935). ("Carlisle" class.) Cairo, Calcutta, Colombo, Capetown, when
finished.



GREAT BRITAIN. Cruiser. Carlisle.



GREAT BRITAIN. Cruisers. ("Caledon" class.) Caledon, Calypso, Caradoc.



SOVIET UNION. Cruiser. Krasni Kavkaz.
Catapult fitted between mainmast and funnel.



GREECE. Cruiser. Helle.



SWEDEN. Coast Defence Ship. Gustav V.
Fore topmast added. Bridge work enlarged.
Mainmast and derrick removed.



SWEDEN. Coast Defence Ship. Sverige.



SWEDEN. Coast Defence Ship. Drottning Victoria,



GERMANY. Gunnery Training Ship. Bremse.



JAPAN. Cruisers. Mikuma, Mogami, Suzuya, Kumano, Tone, Tikuma.



SPAIN. Cruiser. Canarias.
Fore topmast and topgallant mast removed.



FRANCE. Cruiser. Algérie.
Superstructure amidships added.
Crane replaced by two others.



GERMANY. Light Cruiser. Leipzig.
Polemast fitted on aft side of funnel. Catapult fitted between funnel and foremast.
Crane fitted on fore side of funnel.



GERMANY. Light Cruiser. Nürnberg.



GREAT BRITAIN. Cruisers. ("Leander" class.) Leander, Achilles, Neptune, Orion, Ajax.

CRUISERS.



NETHERLANDS. Cruiser. De Ruyter.



ARGENTINA. Cruisers. Almirante Brown, Vintcente de Mayo.
Fore topmast shortened, main topmast lengthened.
Derrick fitted on fore side of mainmast.



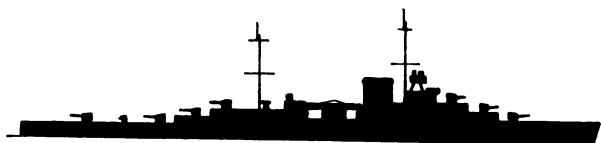
JAPAN. Light Cruiser. Yubari.
Masts and funnel raked aft.



FINLAND. Armoured Gunboats. Vainämöinen, Ilmarinen.



NORWAY. Minesweeping and Training Ship. Olav Trygvason.
Both cranes are fitted abreast mainmast.



GREAT BRITAIN. Cruisers. ("Edinburgh" class.)

FLOTILLA LEADERS AND DESTROYERS

(See pp. 195-227.)



FRANCE. Flotilla Leaders. Cassard, Vauquelin, Kersaint, Tartu, Maille Brézé, Le Chevalier Paul, Algés, Albatros, Epervier, Milan, Gerfaut, Vautour.



FRANCE. Flotilla Leaders. "Le Fantasque" class (6 ships). L'Audacieux, Le Malin, Le Terrible, Le Triumphant, L'Indomitable. Control platform added abaft after funnel.



FRANCE. Flotilla Leaders. Bison, Guépard, Lion, Vauban, Valmy, Verdun.



ITALY. Destroyers. Gen. A. Cantara, Gen. A. Chinotto, Gen. A. Fava, Gen. A. Casalone, Gen. M. Provenzani, Gen. C. Montanari, A. Bassini, E. Cosanz, F. Stocco, G. Carini, G. Medici, G. Acerbi, G. la Farina, G. la Masa, G. Sirtori, N. Fabrizi, V. Orsini. Bridgework extended.



UNITED STATES. Destroyers. The "Flush Deck" type; all U.S. destroyers except those with three funnels. Mainmast shortened.



GERMANY. Destroyers. "Masc" class.



FRANCE. Destroyer. Enseigne Gabele.



GREAT BRITAIN. Destroyers. "Tribal" class.



FRANCE. Flotilla Leaders. Tigre, Chacal, Jaguar, Léopard, Panthère, Lynx. Platform added before after turrets.



YUGO SLAVIA. Flotilla Leader. Dubrovnik.



JAPAN. 1st Class Destroyers. "Fubuki" class. (24 ships.)



FRANCE. Destroyers. Mistral, Cyclone, Bourrasque, Orage, Ouragon, Simoun, Siroco, Tempête, Tramontane, Typhon, Trombe, Tornado.



FRANCE. Flotilla Leader. Amiral Sédès.

POLAND. Destroyers. Burza, Wicher, are similar. Mainmast shortened.



ITALY. Flotilla Leaders (Scouts). "Navigatori" class. A. da Mosto, etc. (12 ships.)



GREAT BRITAIN. Flotilla Leaders. Hardy, Ingfield.



GREAT BRITAIN. Flotilla Leader. Faulknor.



ITALY. Flotilla Leaders (Scouts). Leone, Panthera, Tigra.



JAPAN. 1st Class Destroyers. "Mutsuki" class (12 ships), and "Kamikaze" class (9 ships).



JAPAN. 1st class Destroyers. "Minekaze" class (15 ships).



GERMANY. Destroyers. Ilia, Wolf, Tiger, Luchs, Jaguar, Leopard, Seeadler, Greif, Albatros, Kondor, Falke, Möwe.



GREAT BRITAIN. Flotilla Leader. Codrington.



GREAT BRITAIN. Destroyers. "Acasta," "Beagle," "Crusader" and "Defender" classes. "Acasta" and "Crusader" classes have davits at stern. Flotilla Leaders. Keith, Duncan, Kempenfelt.



GREAT BRITAIN. Destroyers. "Greyhound," "Hero" and "Intrepid" classes. "Greyhound" has davit fitted at stern.



PORTUGAL. Destroyers. Vouga, Lima, Dao, Tejo, Douro.

COLOMBIA. Destroyers. Antioquia, Caldas.



ARGENTINA. Flotilla Leaders. Mendoza, La Rioja, Tucuman.



ITALY. Flotilla Leaders (Scouts). Carlo Mirabelli, Augusto Riboty.



GREAT BRITAIN. Flotilla Leaders. Broke, Koppel, Wallace, Bruce, Douglas, Campbell, Mackay, Malcolm, Montrose.

ROYAL AUSTRALIAN NAVY. Flotilla Leader. Stuart.

SPAIN. Flotilla Leaders. Almirante Valdes, etc., generally similar.



HOLLAND. Destroyers. Van Ghent, Evertsen, Piet Hein, Kortenaar, Banckert, Van Noe, Van Galen, Witte de With.



GREAT BRITAIN. Destroyers. *Vanesa, Vanity, Vanoe, Vanguisher, Vega, Velox, Vendetta, Venetia, Verdun, Versatile, Vesper, Videtta, Vimiera, Violent, Vivacious, Vivien, Vimy (late Vancouver), Vortigern, Valentine, Valorous, Vampire, Viceroy, Viscount, Voyager, Wakeful, Walker, Walpole, Walrus, Warwick, Watchman, Waterhen, Wessex, Westcott, Westminster, Whirlwind, Whitley, Winchester, Wolfhound, Wolsey, Woolston, Wrestler, Wryneck, Vansittart, Venomous, Verity, Volunteer, Wanderer, Wren, Windsor, Veteran.*



GREAT BRITAIN. Destroyers. *Whitehall, Whitshed, Wildswan, Witherington, Wivern, Wolverine, Worcester, Wishart, Witoh.*



GREAT BRITAIN. Destroyers. *Ambuscade, Amazon.*



CHILE. Destroyers. *Serrano, Orella, Riquelme, Hyatt, Vidella, Aldes.*



SWEDEN. Destroyers. *Klas Horn, Klas Ugglä, Ehrensköld, Nordenskjöld. Davit fitted at stern.*



JAPAN. 2nd Class Destroyers. *"Wakatake" class (7 ships), and "Kaya" class (19 ships).*



FRANCE. Destroyers. *Aventurier, Intrépide.*



ITALY. Destroyers. *Q. Sella, B. Riccaoli, F. Crispi, G. Nicolera. Bridgework extended. Platform fitted round mainmast.*



ITALY. Destroyers. *Alessandro Poerio and Guglielmo Pepe. Searchlight platform added before mainmast.*



JAPAN. Destroyers. *"Hibiki" class.*



JAPAN. Destroyers. *"Ariake" class (17 ships).*



GREAT BRITAIN. Flotilla Leaders. *Exmouth, Faulknor. Destroyers. "Eclipse" and "Fearless" classes similar but gun between funnels omitted.*



GREAT BRITAIN. Destroyers. *Admiralty "S" class.*



ITALY. Destroyers. *Paolastro, San Saverio, Martina, Confienza. Bridge and foremost funnel heightened.*



ITALY. Destroyers. *Turbine, Nampo, Euro, Borea, Espero, Ostro, Zefiro, Aquilone, M. Sauro, F. Nullo, D. Manin, C. Battisti. Bridge and foremost funnel heightened.*



DENMARK. Torpedo Boats (1st Class). *Gjølsten, Høgen, Ornen, Laxen, Dragen, Hvalen.*



UNITED STATES. Destroyers. "Farragut" class.



UNITED STATES. Destroyers. "Maury" class.



GREAT BRITAIN. Destroyers. "Javelin" and "Kelly" classes.



ITALY. Destroyers. Dardo, Freccia, Strale, Saetta, Folgore, Lampe, Baleno, Fulmine. Bridgework extended. Control platform fitted between torpedo tubes.



POLAND. Destroyers. Grom, Blyskawica.



GREECE. Destroyers. Hydra, Spetzai, Psara, and Goundouriotis.

**PLANS OF
BRITISH AND FOREIGN WARSHIPS**

GREAT BRITAIN BATTLESHIPS.

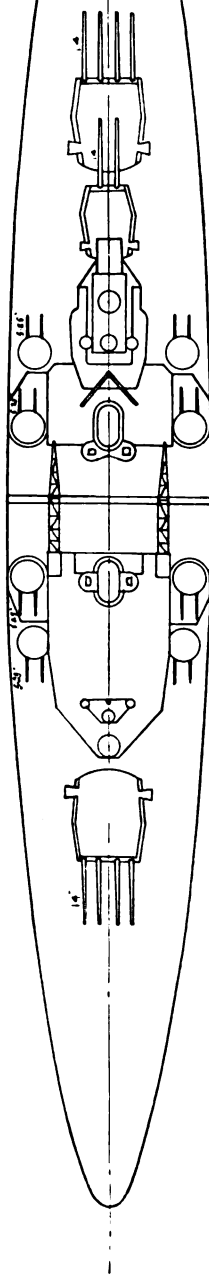
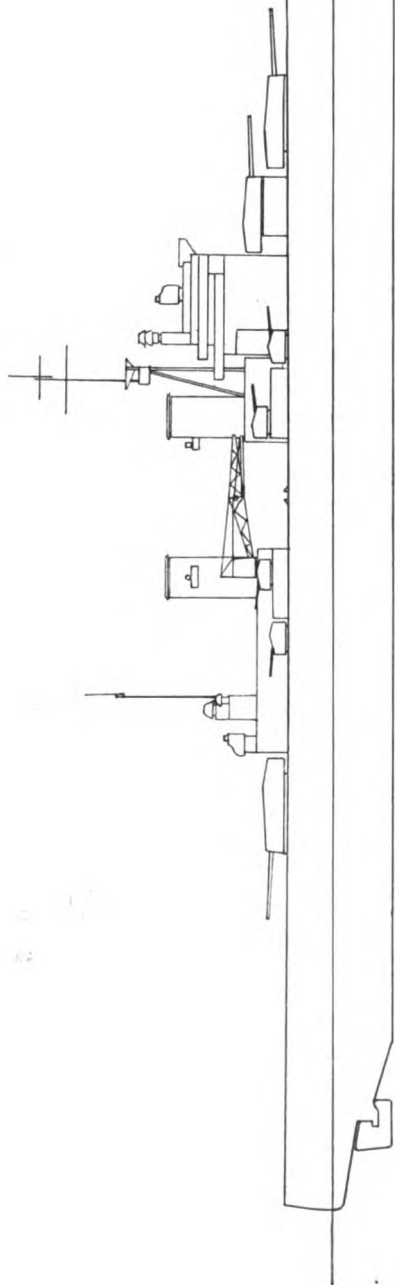
King George V.

Prince of Wales.

Duke of York.

Jellicoe.

Beatty.



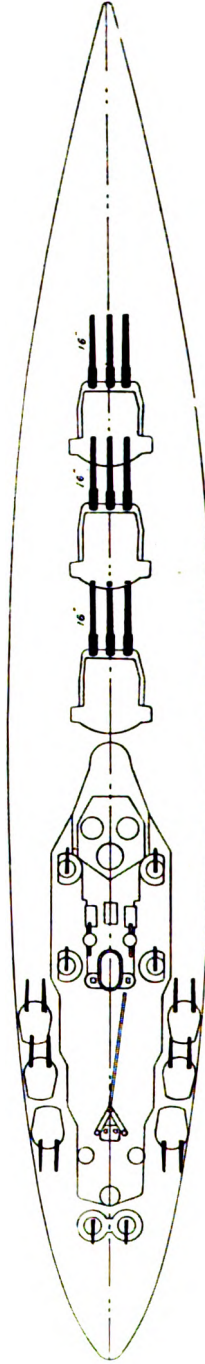
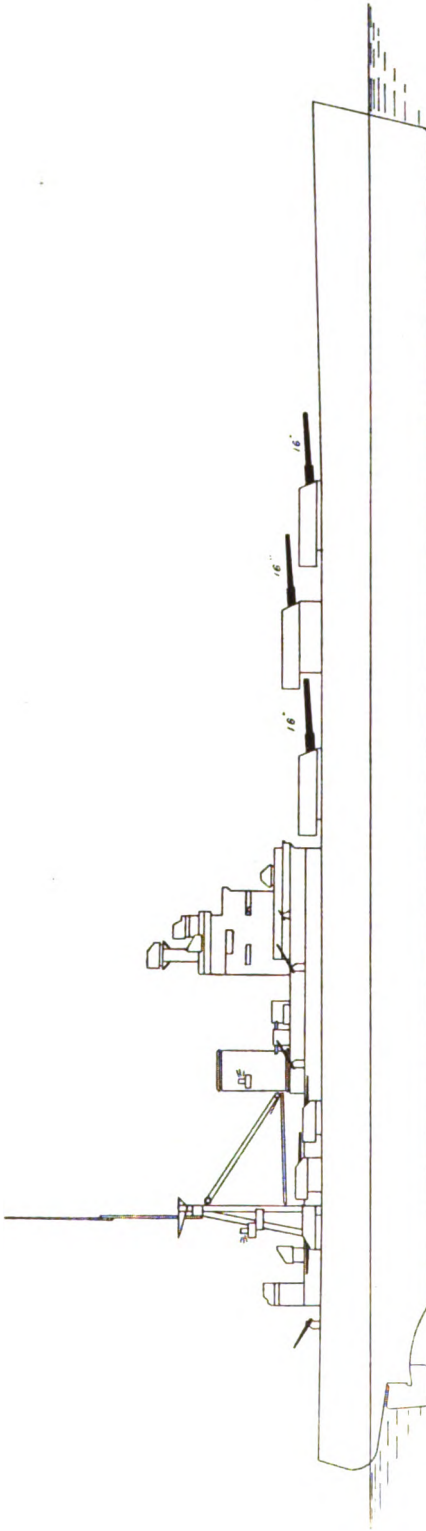
25,000 tons.

Armament, 10—14-in. ; 16—5-25-in.

GREAT BRITAIN.

BATTLESHIPS.

Nelson.
Rodney.



Length (extreme), 710 ft. ; Rodney, 33,900 tons ; Nelson, 33,500 tons ; Speed, 23 knots ; Completed, 1927.
Armament, 9—16-in. ; 12—6-in. ; 6—4.7-in. A.A. ; 4—3-pr. Pom Poms (3 in Rodney) ; 11 L. ; 6 M. ; 2—24-in. submerged torpedo tubes.

NOTE.—A 14-in. waterline armour belt extends from approximately the foremost 16-in. turret to approximately the aftermost 6-in. turret. The turret armour varies from 16-in. to 9-in. Correction to plan.—Mast structure increased. Nelson has a crane amidships. Rodney has a catapult on "C" turret.

GREAT BRITAIN.

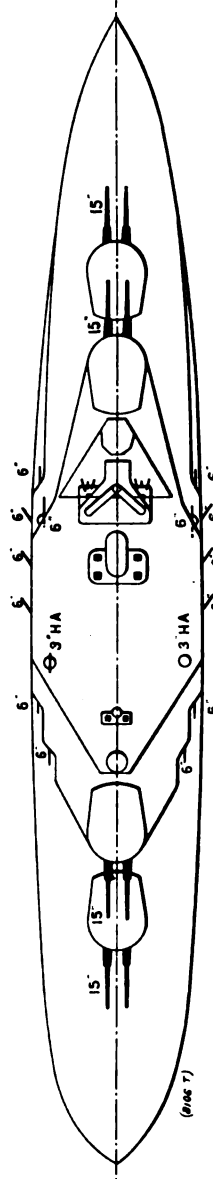
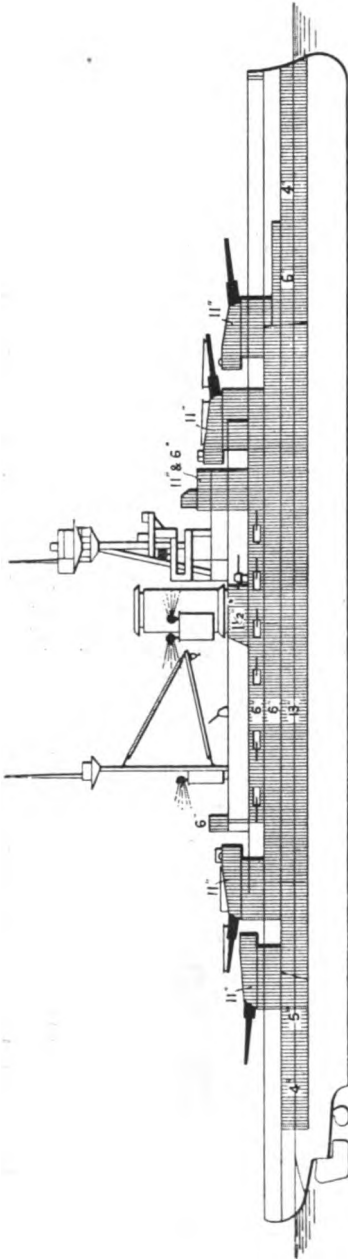
BATTLESHIPS.

Royal Sovereign.

Revenge.

Resolution.

Ramillies.



Length (extreme), 620 ft. 6 in.*; Length B.P., 580 ft.; 23,150 tons; Speed, 23 knots (without bulges); Completed, 1916-17.
 Armament, 8-15-in.; 12-6-in.; 8-4-in. A.A.; 4-3-pr.; 6 M.; 10 L.; 2-21-in. submerged torpedo tubes in Revenge. Revenge and Ramillies have
 4-4-in. H.A. Revenge has 2-2-pr. Pom Poms.
 Corrections to plan.—Searchlights on mainmast and the superstructure 6-in. guns now removed. The 4-in. A.A. guns are fitted on the superstructure
 instead of the 3-in. H.A. shown. Fore topmast removed. Main topgallant mast fitted.

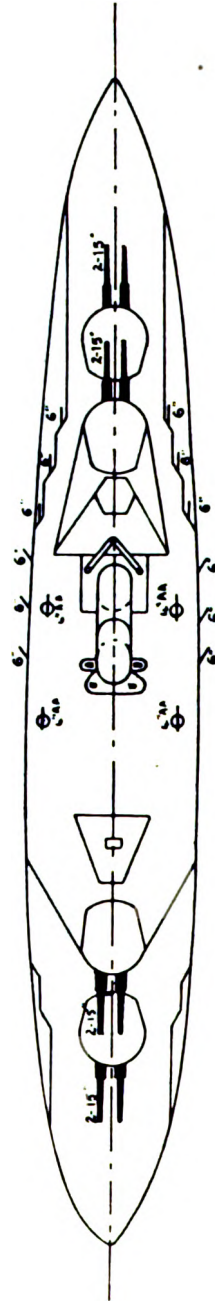
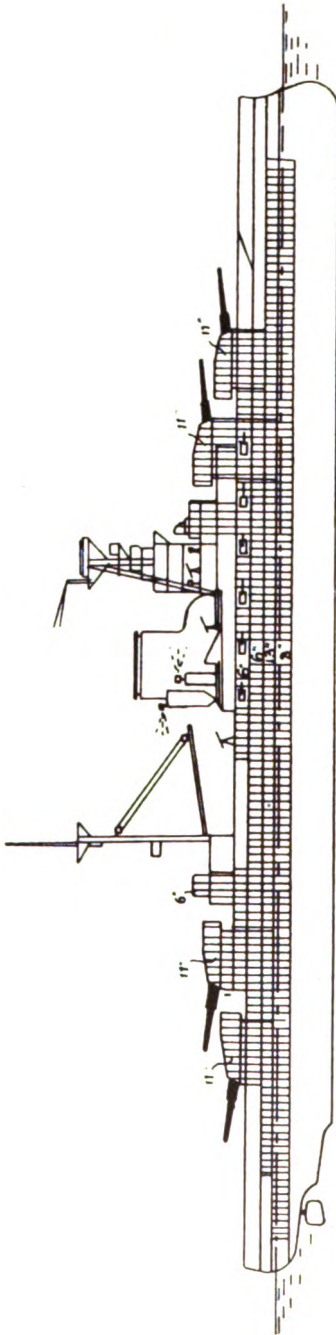
* Revenge, 625 ft. 9 in.

Resolution and Ramillies have tripod mainmasts, a catapult on "X" Turret and a crane abreast the mainmast, and carry 1 aircraft each.

GREAT BRITAIN.

BATTLESHIPS.

Barham. Malaya.



Length B.P., 600 ft. ; (extreme 639½—644½ ft.) ; 31,100 tons ; Speed, 25 knots (without bulges) ; Completed, 1915-1916.

Armament, 8—15-in. ; 12—6-in. ; 8—4-in. A.A. ; 4—3-pr. ; 5 m. ; 10 l.

NOTES.—Barham has tripod mainmast, main topgallant mast, catapult on "X" turret and a crane abreast mainmast.
Malaya has main topgallant mast, catapult before mainmast, a hanger and crane each side abreast funnel. Derrick removed.

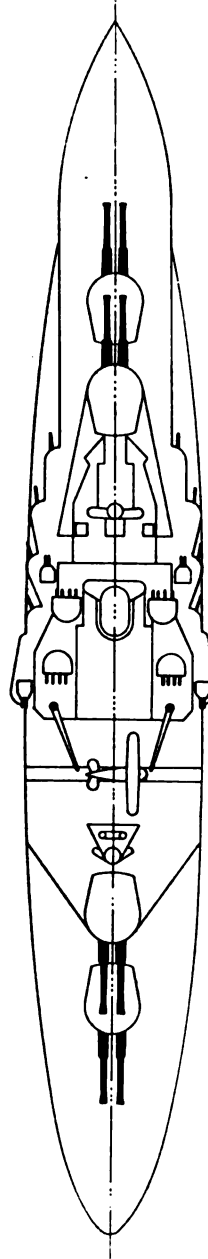
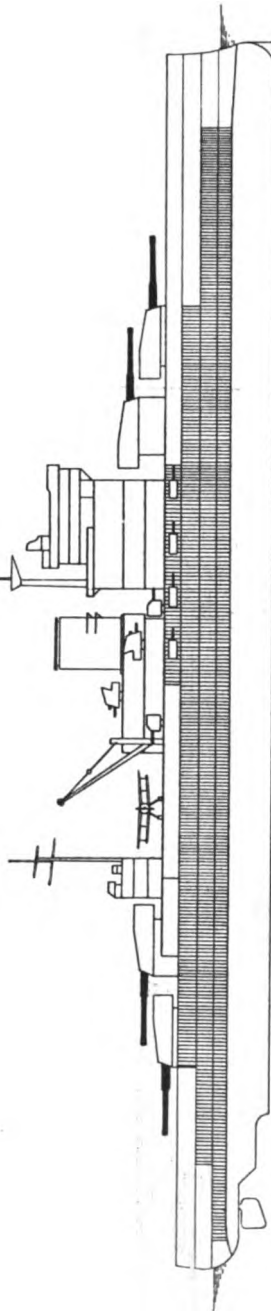
GREAT BRITAIN.

BATTLESHIPS.

Warspite.

Queen Elizabeth.

Vallant

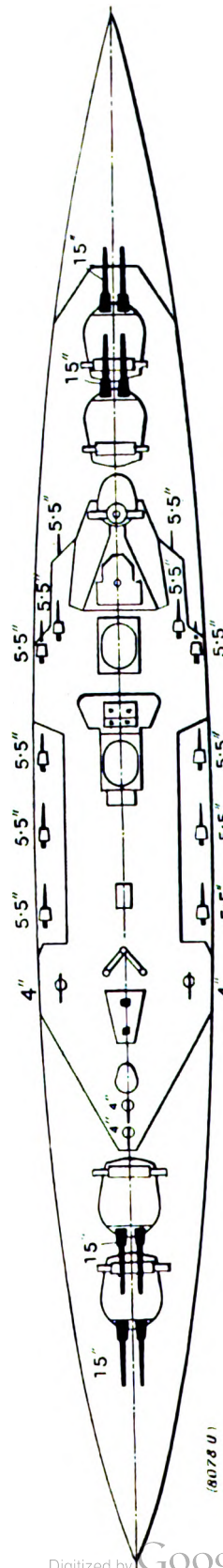
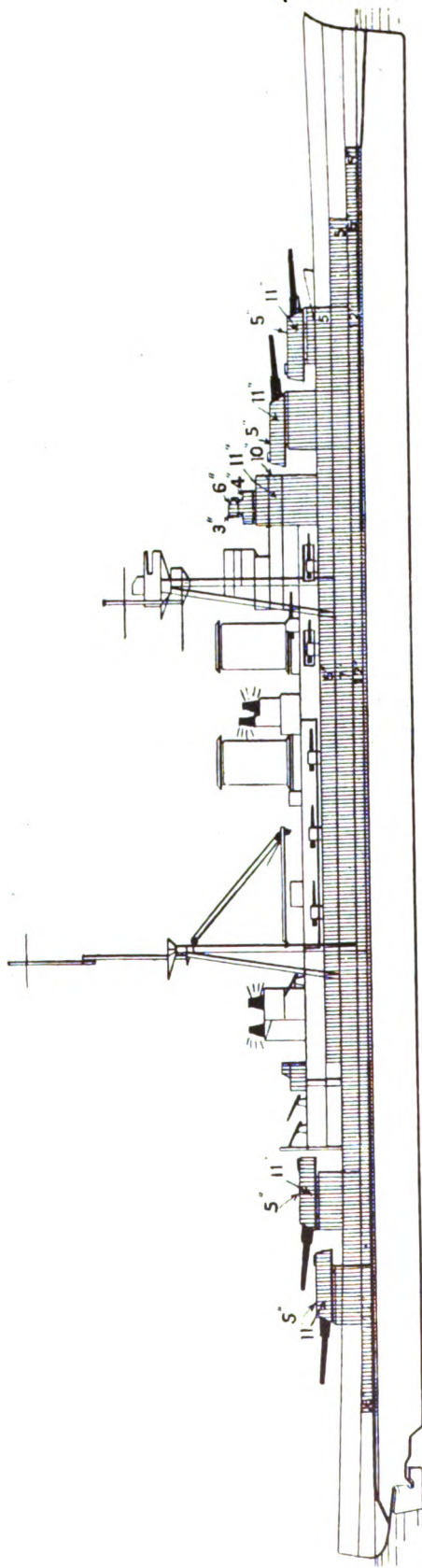


Length B.P., 600 ft.; (extreme 630 ft. 8 in.—646 ft.); 31,100 tons; Speed, 25 knots; Completed, 1915-1916.
Armament, 8—15-in.; 12—6-in.; 8—4-in. A.A.; 4—8-pdr. Pom Poms; 1 catapult; 1 aircraft. Vallant has 4—4-in. A.A.
NOTES.—Queen Elizabeth and Vallant have tripod foremasts and are under reconstruction.

GREAT BRITAIN

BATTLE-CRUISER.

Hood.



Length (extreme), 860 ft. 10 in. ; Length B.P., 810 ft. ; 42,100 tons ; Speed, 31* knots ; Completed, 1920.
Armament, 8—15-in. ; 10—5.5-in. ; 8—4-in A.A. ; 4—3-pdr. ; 5 M. ; 10 L. ; 2—2-pdr. Pom Poms. ; 4 A.W. and 2 sub. 21-in. torpedo tubes.
* Trials at 44,600 tons, 31.89 knots with 151,000 S.H.P.
Correction to plan.—Fore topgallant mast added and bridgework modified.

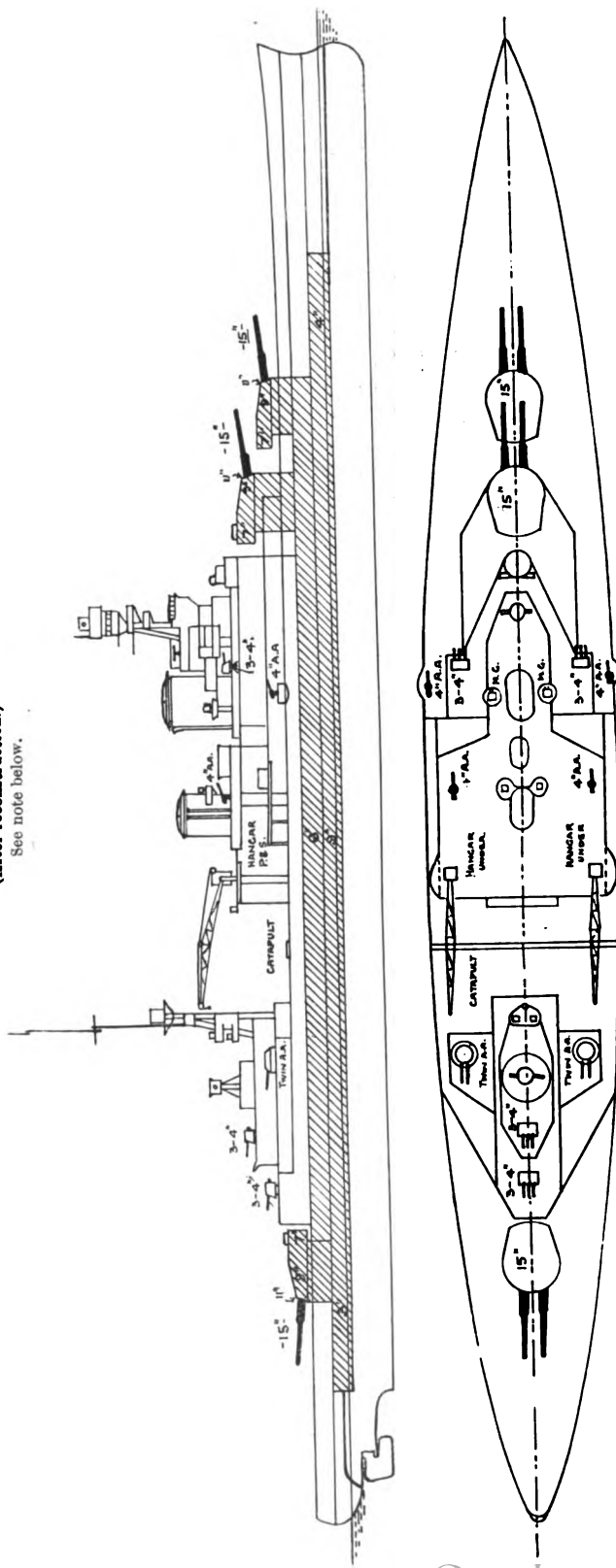
GREAT BRITAIN.

BATTLE-CRUISER.

Repulse. Renown.

(After reconstruction.)

See note below.



Length (extreme), 794 ft. 2 ins. ; Speed, 31½ knots (without bulges) ; Completed, 1916.

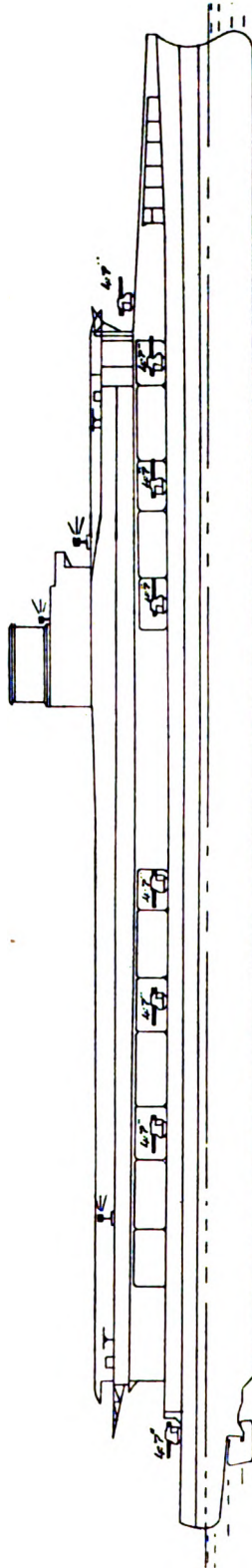
Repulse was reconstructed 1936. Renown 1939.

Armament, 6—15-in. ; 12—4-in. ; 4—4-in. A.A. ; 2 twin A.A. ; 2 multi-machine guns ; 1 catapult ; 4 aircraft. 8 torpedo tubes in Repulse

GREAT BRITAIN

AIRCRAFT CARRIER.

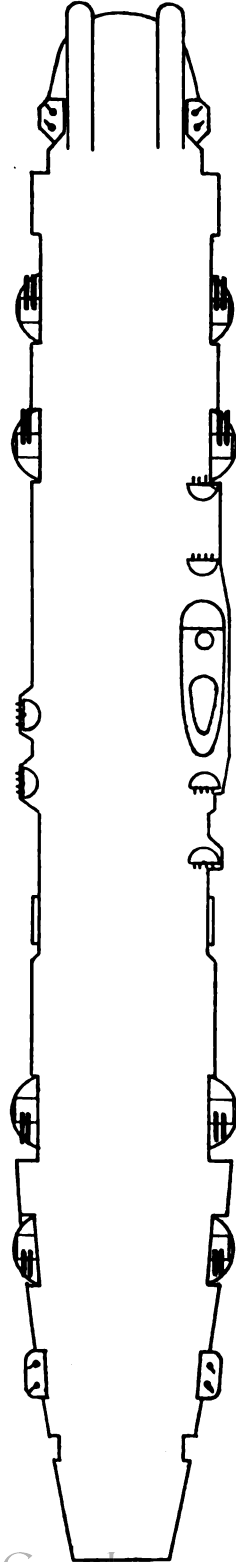
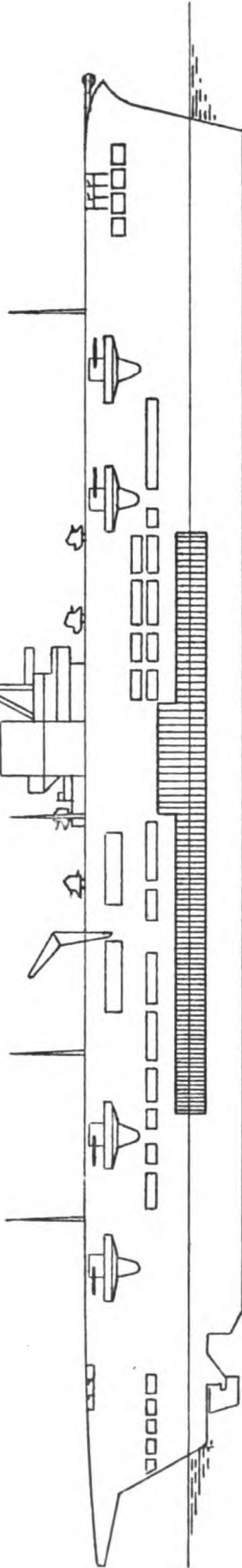
Glorious.



Length (extreme), 786 ft. 3 ins. ; 22,500 tons ; Speed, 30½ knots ; Launched as a cruiser (1916) ; converted to an aircraft carrier (completed, 1930).
 Armament, 16—4·7-in. ; 4—3-pr. ; 3—2-pr. Pom Poms ; 4 M. ; 10 L. ; 48 aircraft.

Corrections to plan.—The flight deck extends to stern, quarter deck raised a deck, tripod mast added before funnel, and three wireless masts added each side of flight deck.

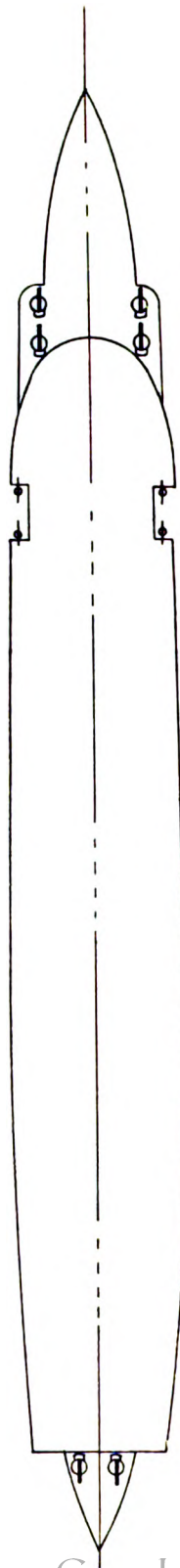
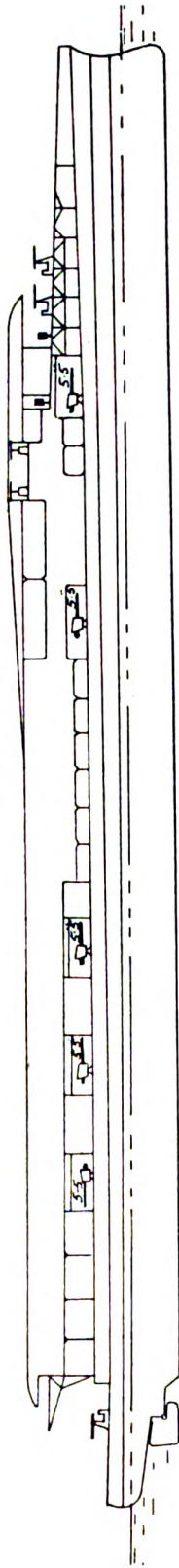
**GREAT BRITAIN.
AIRCRAFT CARRIER.**
Ark Royal.



Length (extreme), 800 ft.; 22,000 tons; 80½ knots; Completed, 1938.
Armament, 16—4.5-in. guns, 4—8 pr.; 70 aircraft.

GREAT BRITAIN
AIRCRAFT CARRIER.

Furious.



Length (extreme), 786 ft. 6 ins. ; 22,450 tons; Speed, 31 knots; Completed as a cruiser, 1917; Conversion to aircraft carrier completed, 1925.

Armament, 10—5·5-in. ; 3—4-in. A.A. ; 4—3-pr. ; 4—2-pr. ; 46 smaller ; 33 aircraft.

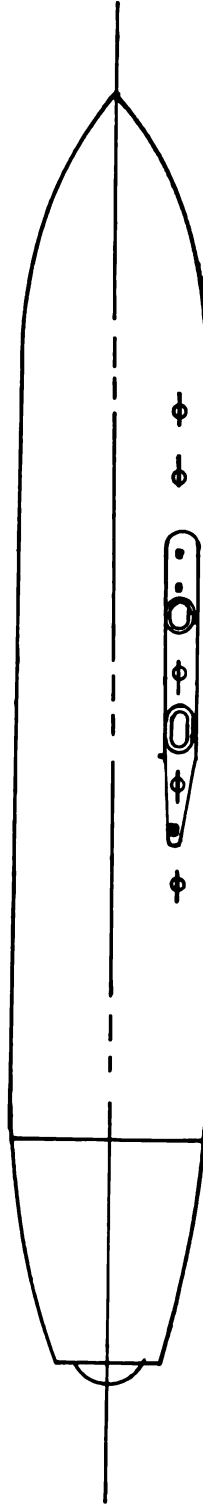
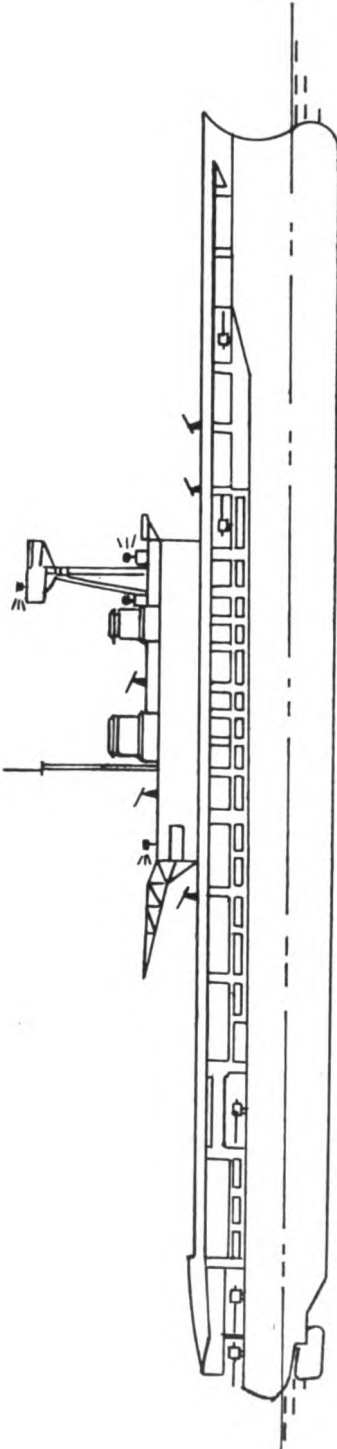
Three wireless masts added each side of flight deck. Quarter deck has been raised one deck.

Top deck forward has been levelled off and closed in.

GREAT BRITAIN.

AIRCRAFT CARRIER.

Eagle.



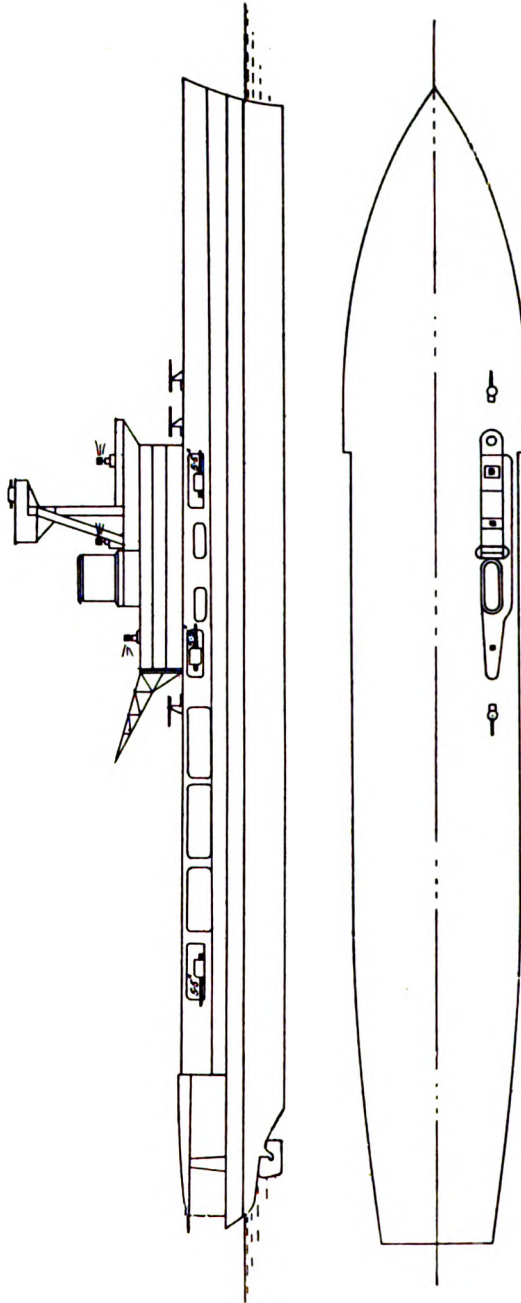
Length (extreme), 667 ft. 6 ins. ; 22,600 tons ; Speed, 24 knots ; Completed as an aircraft carrier, 1924.
Armament, 9-6-in. ; 4-4-in. A.A. ; 4-3-pr. ; 32 smaller ; 20 aircraft.

Fore topmast added and mast structure modified.

Signal mast added forward.

GREAT BRITAIN.
AIRCRAFT CARRIER.

Hermes.

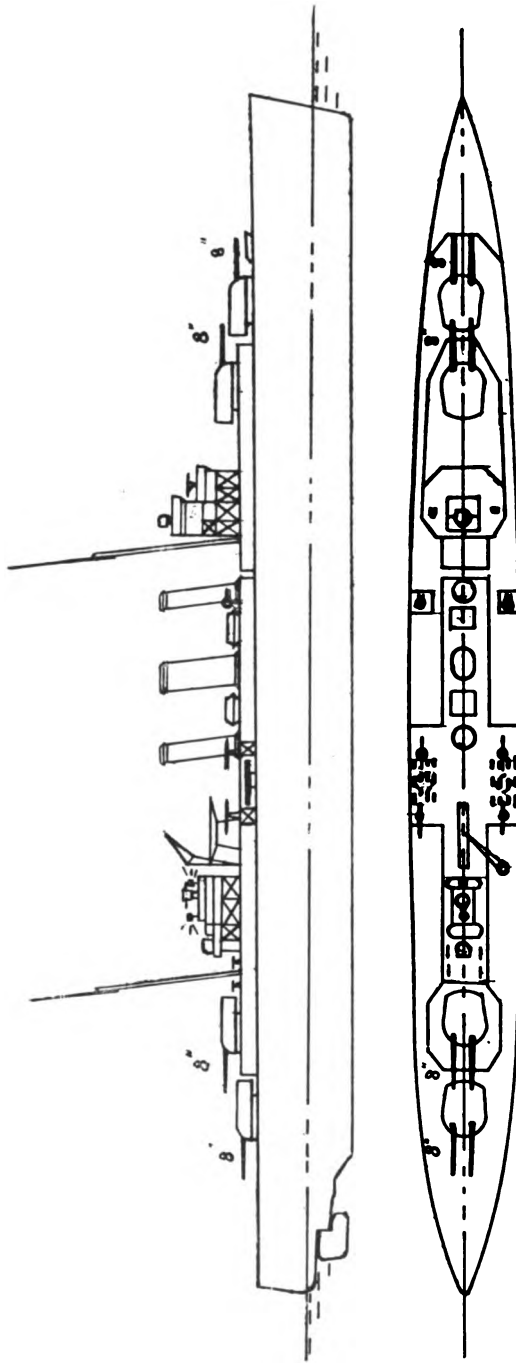


Length (extreme), 599 ft. 6 ins. ; 10,850 tons ; Speed, 25 knots ; Completed, 1924.
Armament, 6—6-in. ; 3—4-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 4 m. ; 16 L. ; 15 aircraft.
Flight deck extended aft. Fore topmast and signal mast forward added.

GREAT BRITAIN.

CRUISERS.

<i>"London" Class.</i>		
London.	Sussex.	Devonshire.
	Shropshire.	
<i>"Norfolk" Class.</i>		
Dorsetshire.*	Norfolk.*	



Displacements, 9,780—9,900 tons : Length (extreme), 680 ft. : Norfolk and Dorsetshire, 688 ft. : Armament, 8—8-in. ; 8—4-in. A.A. ; 4—3-pr. ; 4—2-pr. Pom Poms ; 4 M. ; 8 L. ; 8—21-in. torpedo tubes ; 1 aircraft ; 1 catapult.

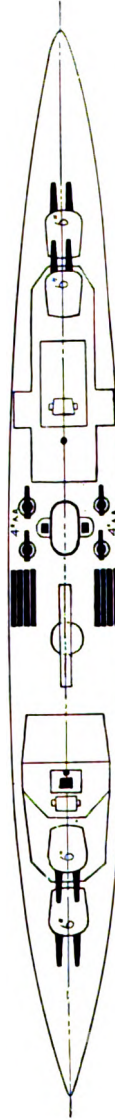
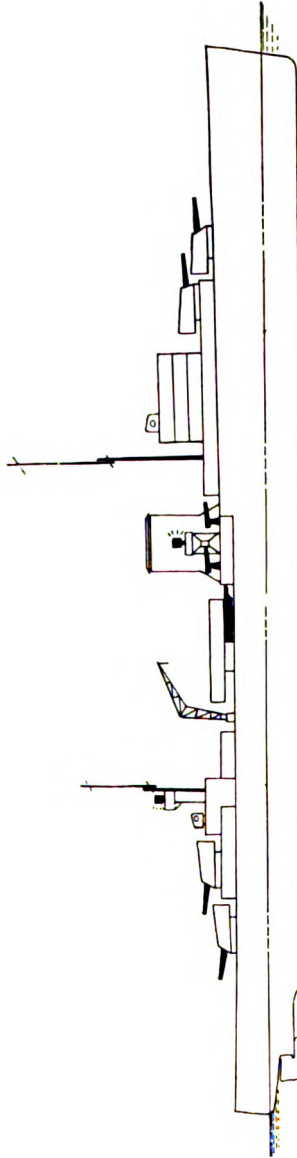
* In Dorsetshire and Norfolk the seaplane crane and the 4—4-in. guns are slightly forward of the positions shown.
Fore topgallant mast added.

GREAT BRITAIN.

CRUISERS.

"Leander" Class.

Leander. Achilles. Neptune. Orion. Ajax.



Displacement, 6,985-7,270 tons ; Length (extreme), 554 ft. 6 ins. ; Speed, 32½ knots. Armament, 8-6-in., 8-4-in. A.A., 4-3-pr., 8 torpedo tubes, 1 catapult ; 2 aircraft. Achilles has 4-4-in. A.A.

Leander and Achilles are attached to New Zealand division and have 1 aircraft.

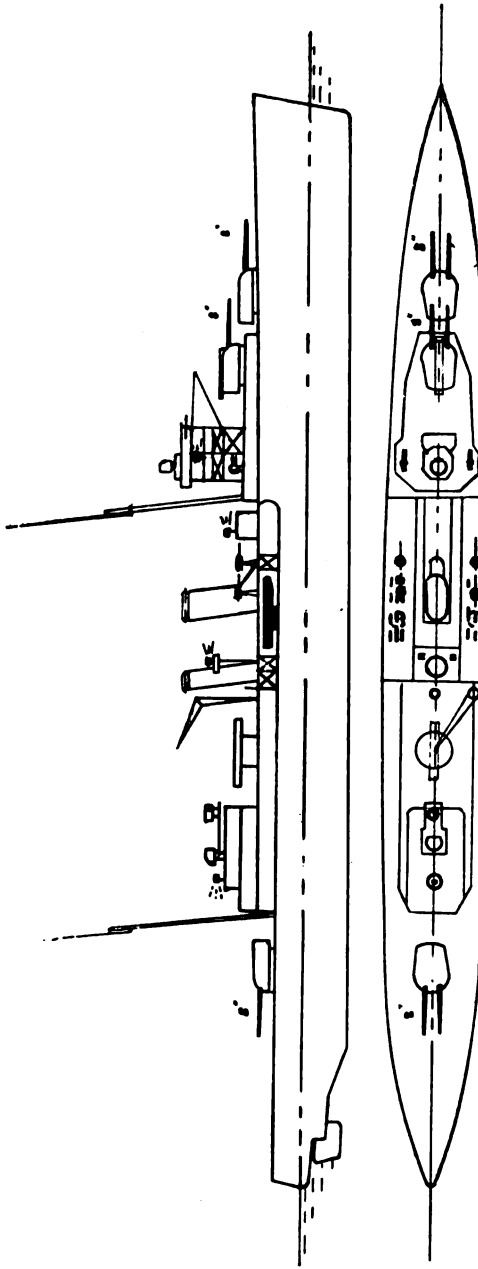
GREAT, BRITAIN.

CRUISERS.

"York" Class.

York.

Exeter.*



Displacement: York, 8,250 tons; Exeter, 8,390 tons; Length (extreme), 575 ft.; Speed: York, 32½ knots; Exeter, 32 knots. Armament, 6-8-in. : 4-4-in. A.A. : 4-8-pr. : 2-2-pr. : 4 M. ; 8 L. ; 6-21-in. torpedo tubes ; 2 catapults and 2 aircraft in Exeter ; 1 catapult and 1 aircraft in York.

* In Exeter funnels and masts are vertical, and the mainmast is taken up through the superstructure.

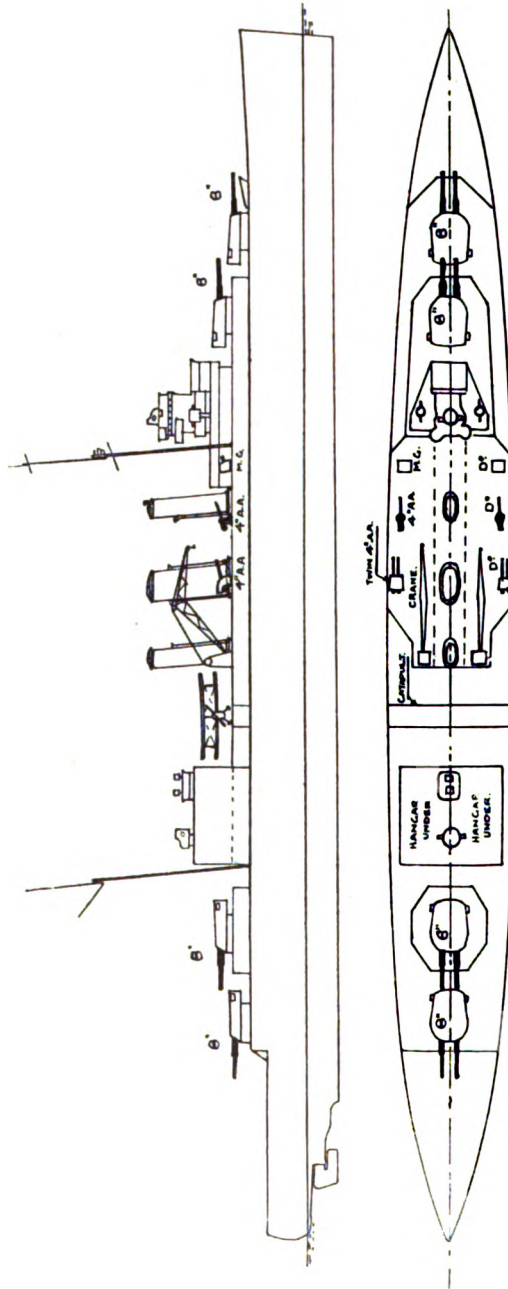
GREAT BRITAIN.

CRUISERS.

"Kent" Class.

Berwick.	Kent.	Cumberland.	Suffolk.	Cornwall	Australia.*	Canberra.*
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(As reconstructed 1936-1938.)



Length (extreme), 630 ft.; 10,000 tons; Speed 31½ knots; Completed 1928. Armament, 8—8-in.; 8—4-in. A.A.; 2 multi-machine guns; 1 catapult; 3 aircraft. Kent, Australia and Canberra have 1 aircraft; Cumberland and Suffolk have 6—4-in. A.A.; Australia and Canberra have 4—4-in. A.A.

NOTES.—Berwick, Kent, Cornwall, Australia, and Canberra are flush-decked.

* Royal Australian Navy. Australia and Canberra are not provided with hangars.

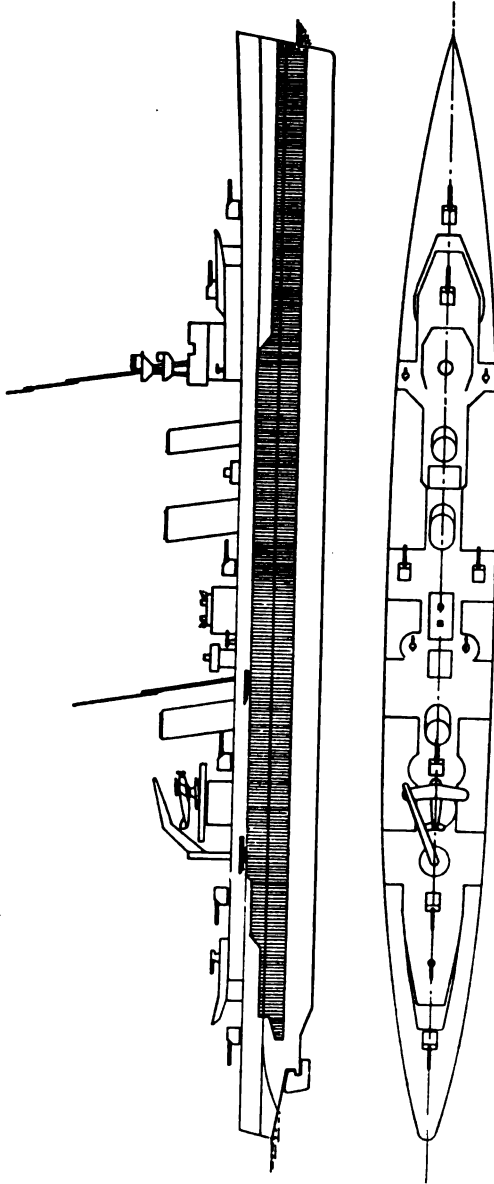
GREAT BRITAIN.

CRUISERS.

"E" Class.

Emerald.

Enterprise.*



Length (extreme), 570 ft. ; Length R.P., 535 ft. ; Emerald, 7,550 tons ; Enterprise, 7,580 tons ; Speed, 33 knots.
Armament, 7-6-in. ; 8-4-in. A.A. ; 4-3-pr. ; 2-2-pr. Pom Poms ; 2 M. ; 8 L. ; 16-21-in. torpedo tubes ; 1 catapult ; 1 aircraft.

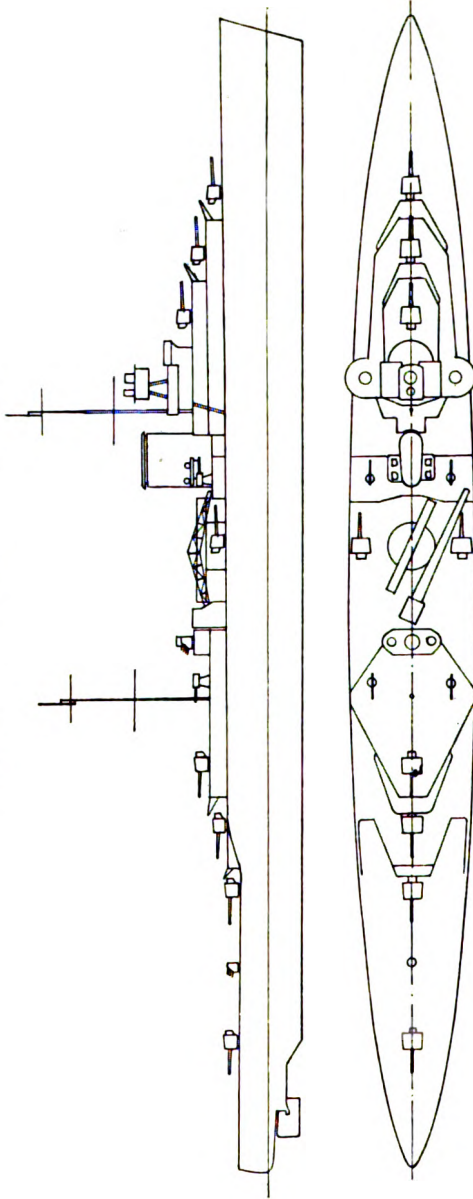
* In Enterprise the two forward 6-in. guns are mounted in a twin mounting on forecastle deck.

GREAT BRITAIN.

CRUISERS.

"Hawkins" Class.

Effingham.	Hawkins.	Frobisher.
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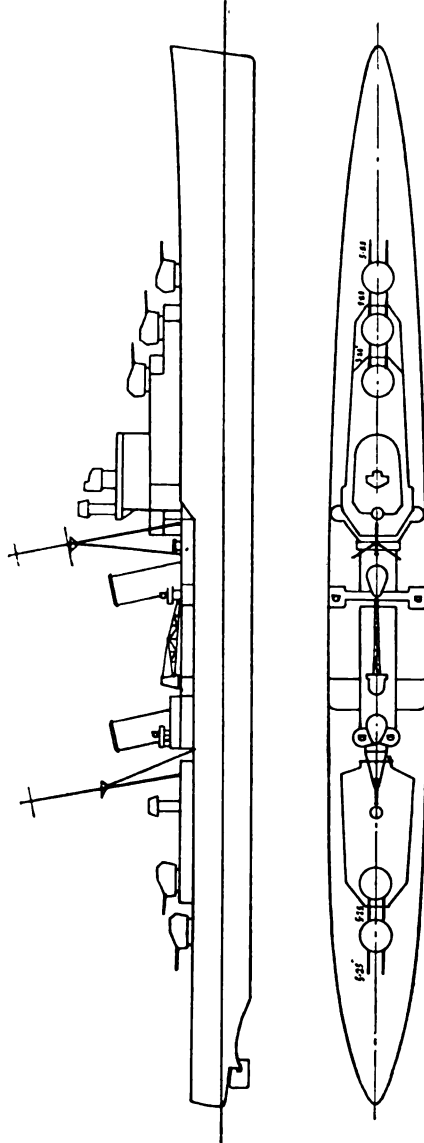
Length (extreme), 605 ft. ; Length B.P., 565 ft. ; 9,550—9,800 tons ; Speed : Effingham 29½ knots ; Hawkins 29½ knots ; Frobisher 30½ knots.
 Armament : 9—6-in. ; 4—4-in. A.A. ; 4—3-pr. ; 2—2-pr. ; 2 M. ; 8 L. ; 4 torpedo tubes.

GREAT BRITAIN.

CRUISERS.

"Dido" Class.

Bonaventure. Charybdis. Cleopatra. Dido. Euryalus. Hermione. Scylla. Sirius.



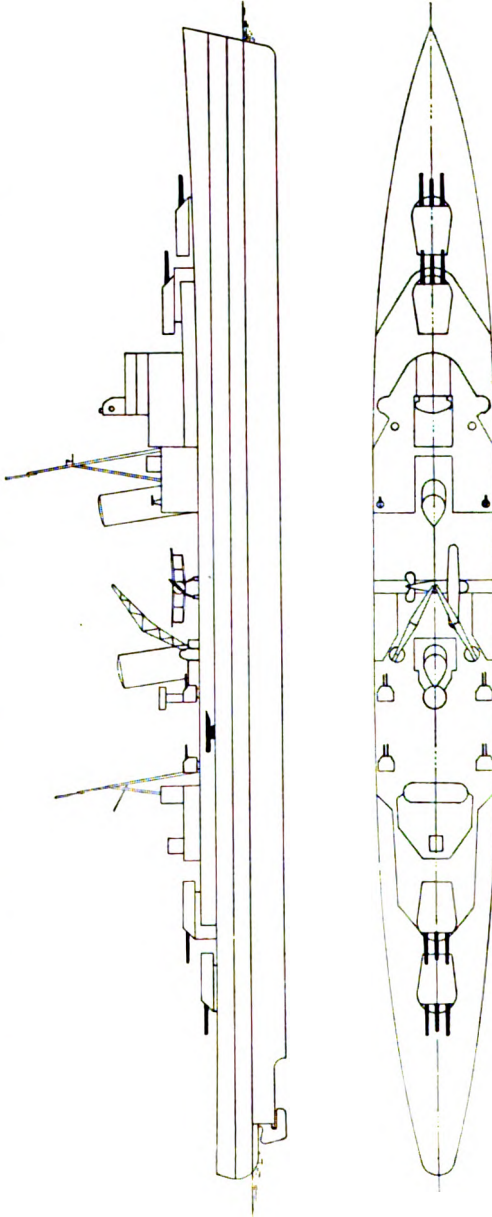
5,450 tons.
Armament, 10—6.25-in.

GREAT BRITAIN.

CRUISERS.

"Southampton" Class.

Southampton, Newcastle, Sheffield, Birmingham, Glasgow, Gloucester, Liverpool, Manchester.



Length (extreme), 591 ft. 6 ins.; 9,100 tons (Liverpool, Manchester and Gloucester 9,400 tons); Speed, 32 knots; Completed, 1937-38.
Armament, 12—6-in.; 8—4-in. A.A.; 2—2-pr.; 6—21-in. torpedo tubes; 1 catapult; 3 aircraft.

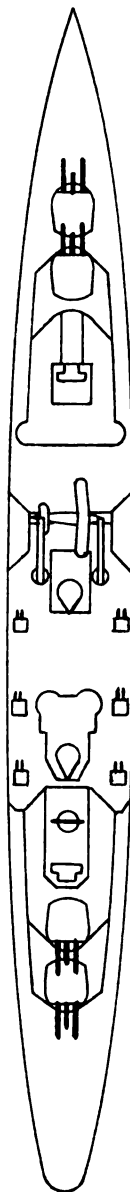
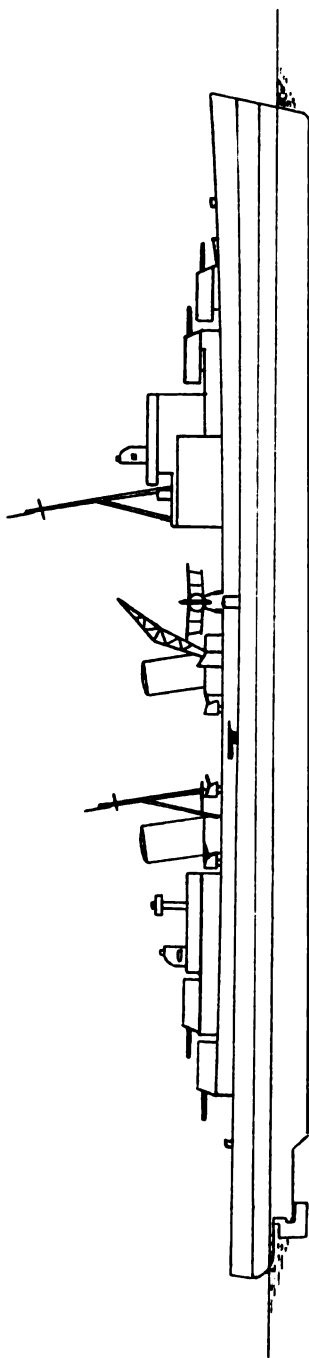
GREAT BRITAIN.

CRUISERS.

Improved "Southampton" Class.

Belfast.

Edinburgh.



Length (extreme), 613 ft. 6 ins.; 10,000 tons; Speed, 32½ knots.

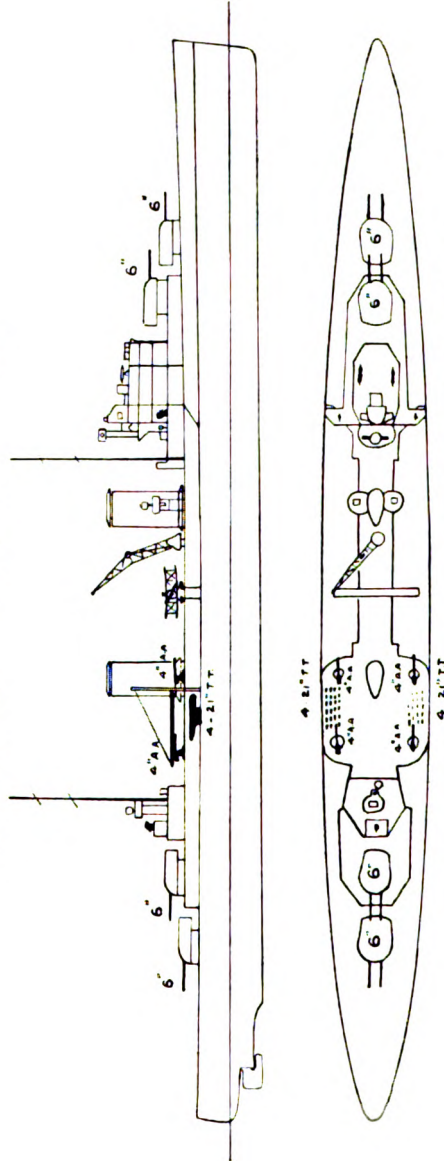
Armament, 12—6-in. ; 12—4-in. A.A. ; 20 smaller guns ; 6 torpedo tubes.

COMMONWEALTH OF AUSTRALIA.

CRUISERS.

Modified "Leander" Class.

Perth (ex Amphion).	Hobart (ex Apollo).	Sydney.
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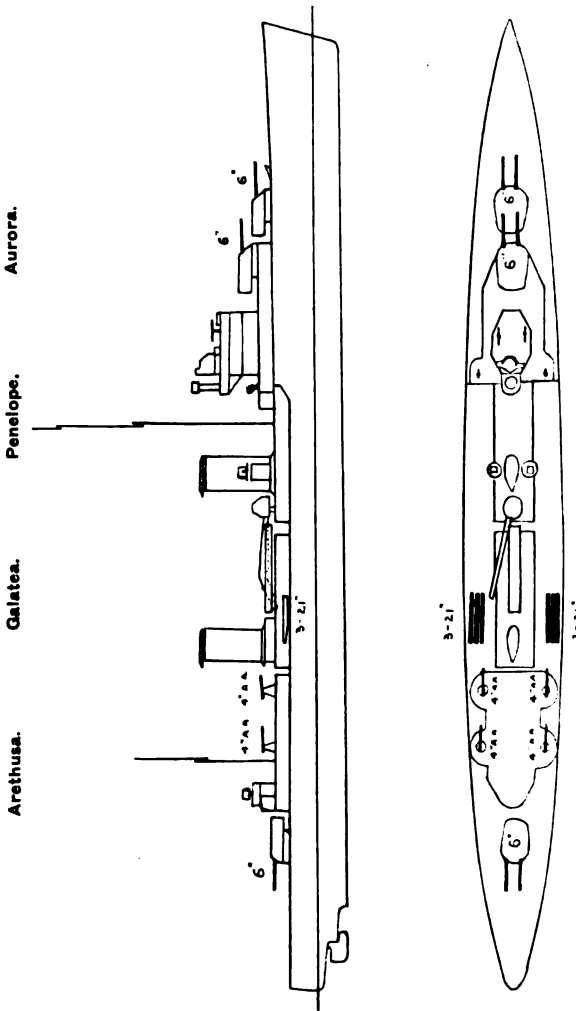


Displacement, 6,850-7,100 tons : Length (extreme), 560 ft. : Speed, 32½ knots.
 Armament, 8-6-in ; 8-4-in. A.A. : 21 smaller guns ; 4 quadruple 21-in. torpedo tubes ; 1 catapult.

Perth and Hobart carry 2 aircraft and Sydney 1 aircraft. Sydney completed, 1935 ; Perth and Hobart completed in 1936.

GREAT BRITAIN.

CRUISERS

"Arethusa" Class.

Displacement, 5,250-5,270 tons; Length (extreme), 508 ft.; Speed, 34½ knots; Completed 1885-87.
 Armament, 6-6-in.; 4-4-in. A.A.; 2-8-pr.; 18 smaller; 2 triple 21-in. torpedo tubes; 1 catapult, 1 aircraft.

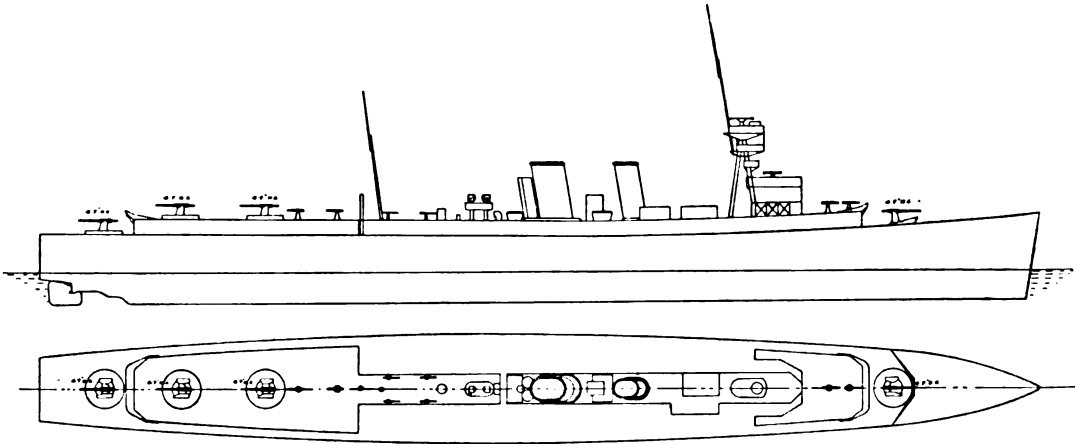
Aurora and *Penelope* have 4 twin 4-in. A.A. mountings instead of singles.

Derrick fitted on aft side of after funnel.

GREAT BRITAIN.

CRUISER MINELAYER.

Adventure.



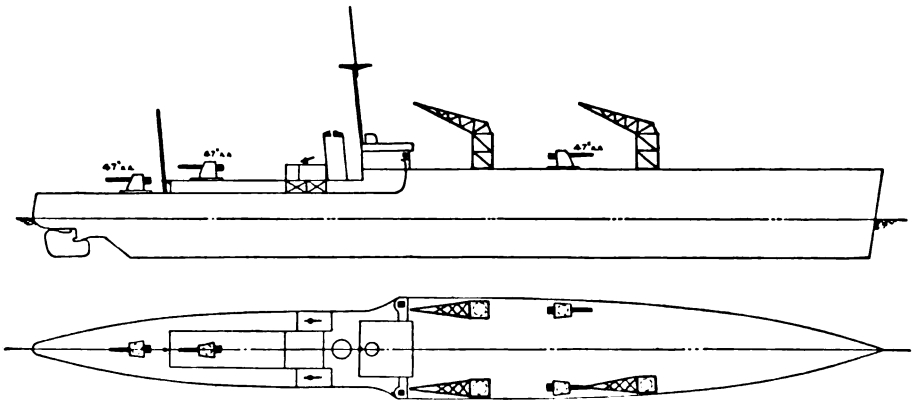
Length (extreme), 539 ft. ; Length B.P., 500 ft. ; 6,740 tons ; Speed, 28 knots.

Armament, 4—4·7-in. A.A. ; 4—3-pr. ; 4—2 pr. ; 2 M. ; 8 L. ; 310 mines.

Stern has been lengthened and rounded in plan. Derricks added abreast masts.

SEAPLANE CARRIER.

Albatross.



Length, 443½ ft. ; 4,800 tons ; Speed, 21 knots ; Completed, 1929.

Armament, 4—4·7-in. A.A. ; 4—2-pr. Pom Poms ; 4—3-pr. ; 4 M. ; 20 L. ; 9 seaplanes.

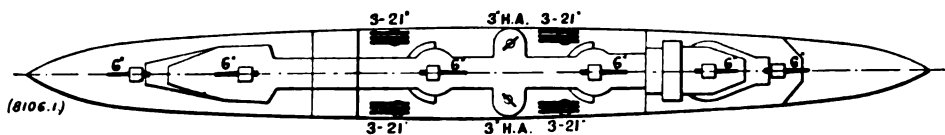
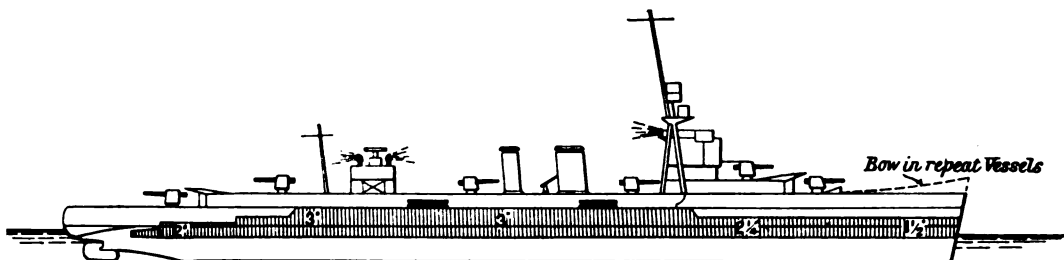
(P55)

GREAT BRITAIN.

CRUISERS.

"D" Class.

*Despatch. *Diomedé. Danae. Dauntless. Dragon. *Delhi.
*Dunedin. *Durban.



Length, 472½ ft. ; 4,850 tons ; Speed, 29 knots ;
Armament, 6—6-in. ; 3—4-in. A.A. ; 4—3-pr., 2—2-pr. ; 2 M. ; 8 L. ; 12—21-in. torpedo tubes.

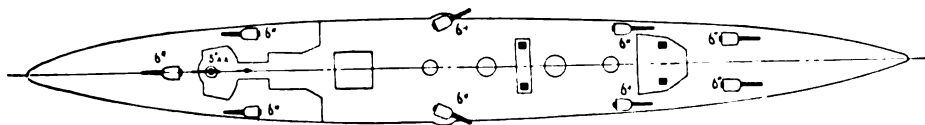
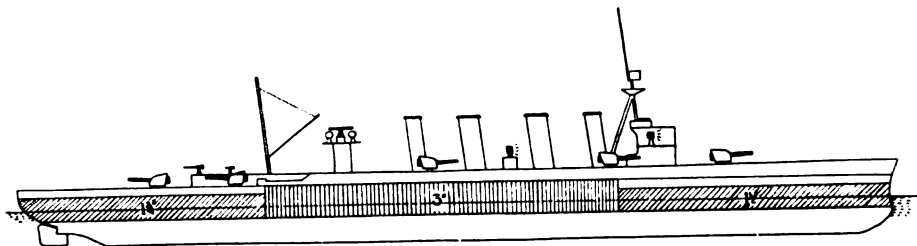
Main topmast fitted. Foremost gun in Diomedé housed in gunhouse.

* Repeat vessels.

COMMONWEALTH OF AUSTRALIA.

CRUISER.

Adelaide.



Length, 462½ ft. ; 5,100 tons ; Speed, 25½ knots.
Armament, 9—6-in. ; 4—3-pr. ; 1—3-in. A.A. ; 8 L. ; 2 submerged 21-in. torpedo tubes.

GREAT BRITAIN,

CRUISERS.

"Ceres" Class.

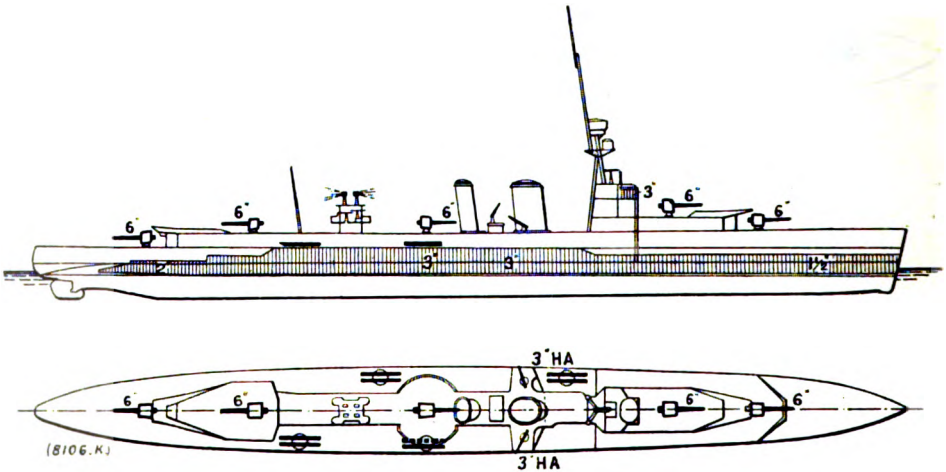
Ceres.

Curacao.

Cardiff.

"Carlisle" Class.

Carlisle.



Length (extreme), 450 ft.-451 ft. 9 ins. ; Length B.P., 425 ft. ; 4,200-4,290 tons ; Speed, 29 knots ; Completed, 1917-22.

Armament, 5—6-in. ; 2—3-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 4 above-water 21-in. D.R. torpedo tubes.
Cardiff, Curacao, and Ceres have 2—3-pr.

Carlisle has a trawler bow.

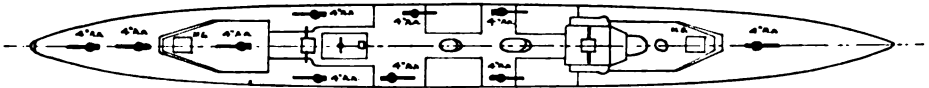
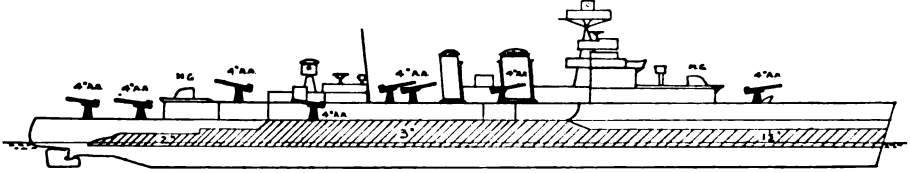
GREAT BRITAIN.

CRUISERS.

"Ceres" Class.

Coventry. Curlew. Calcutta. Cairo.
Capetown and Colombo when completed.

Anti-Aircraft gun ships.



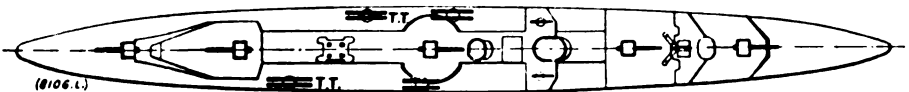
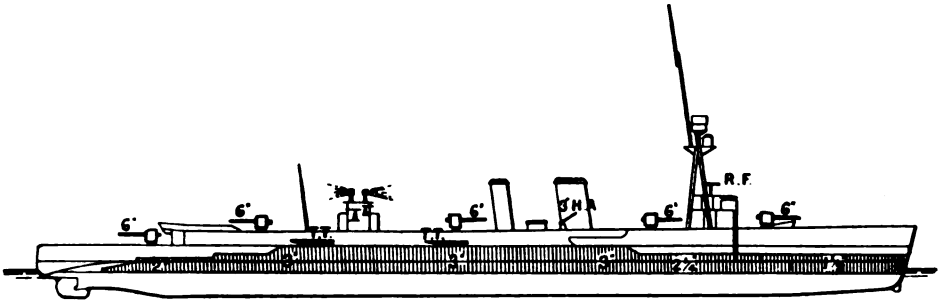
Length (extreme), 450 ft. ; 4,290 tons ; Speed, 29 knots ; Completed, 1917.

Armament, 10—4-in. A.A. ; 2—3-pr. ; 2 multi-machine guns ; 2 M.G. ; 8 L. ; 8—21-in. torpedo tubes.
Calcutta and Cairo have 8—4-in. A.A.

CRUISERS.

"Caledon" Class.

Caledon. Calypso. Caradoc.



Length (extreme), 450 ft. ; Length B.P., 425 ft. ; 4,180 tons ; Speed, 29 knots ; Completed, 1917.

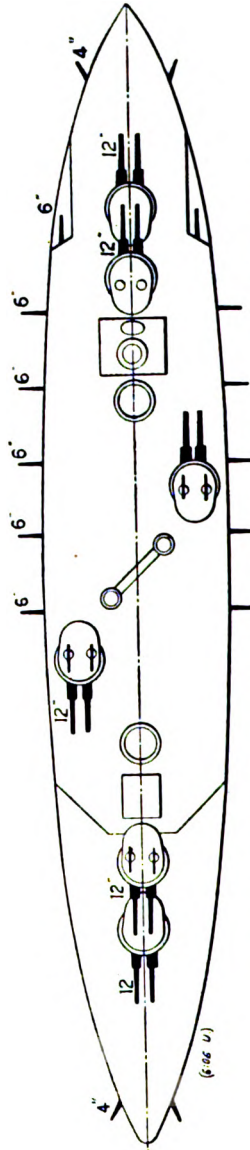
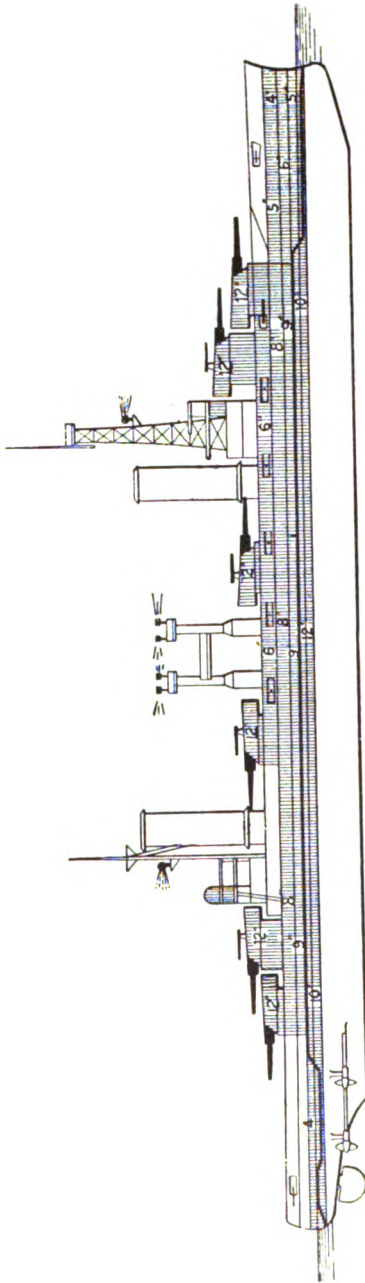
Armament, 5—6-in. ; 2—3-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 2 M. ; 8 L. ; and 4 above-water 21-in. D.R. torpedo tubes.

ARGENTINA.

BATTLESHIPS.

Moreno.

Rivadavia.



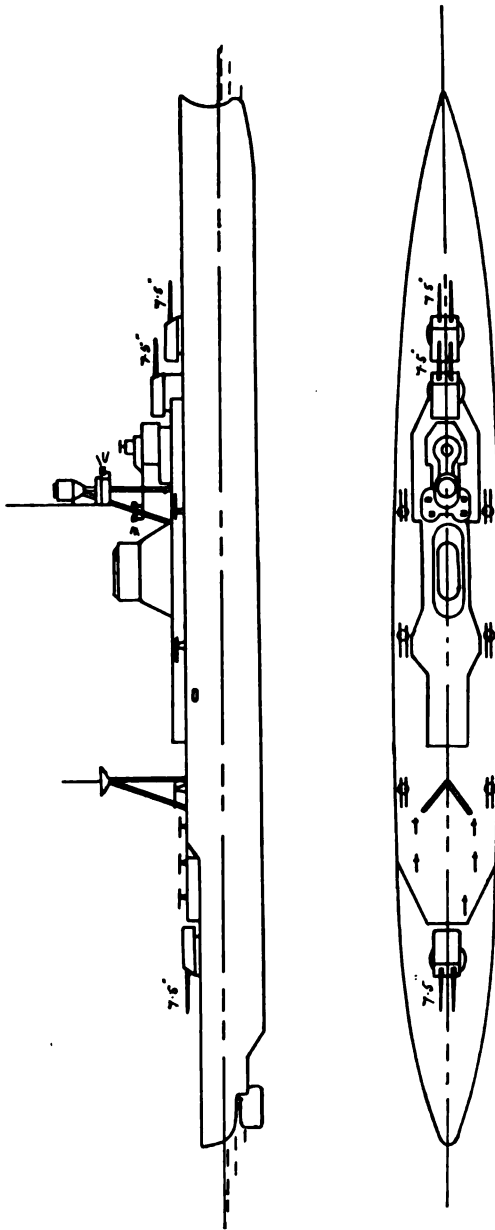
Length (extreme), 585 ft.; Length on W.L., 575 ft.; 27,940 tons; Speed, 22½ knots; Completed, 1914-15. Armament, 12-12-in.; 12-6-in.; 4-3-pr.; 6 M.; 4 L.; 2 submerged 21-in. torpedo tubes.

Guns on B and X turrets replaced by rangefinders.

ARGENTINA.

CRUISERS.

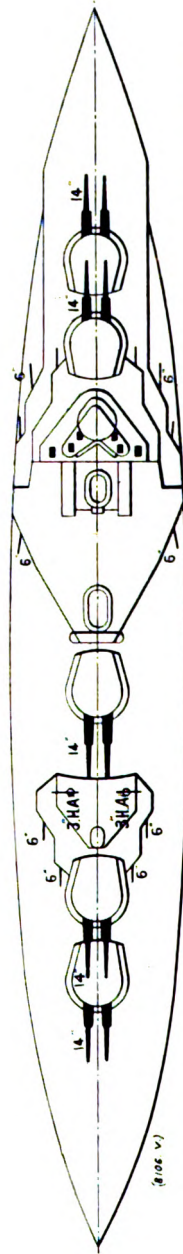
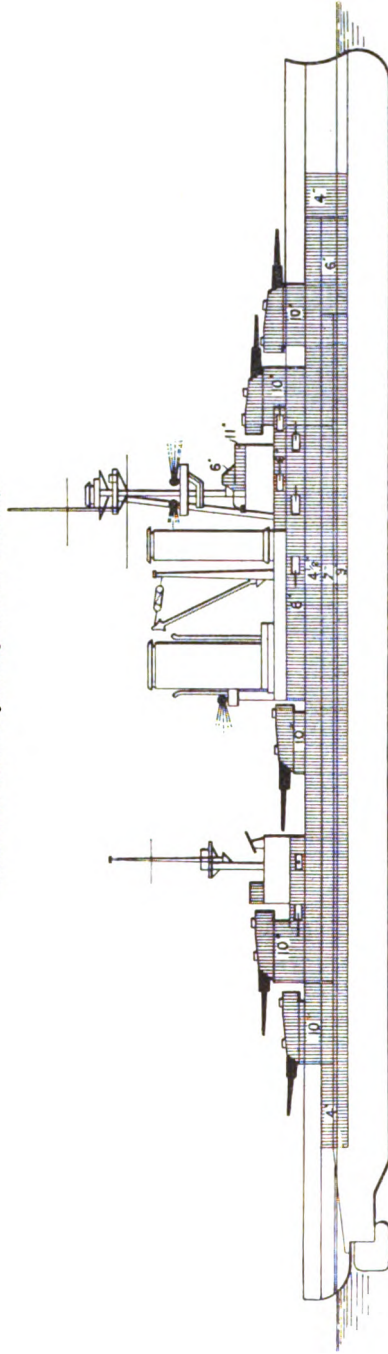
Almirante Brown. Vinticino de Mayo.



Length (extreme), 548 ft.; 9,495 tons; Speed, 32 knots. Completed, 1931.
 Armament, 6—4-in. A.A.; 6 Pom Poms; 6—21-in. torpedo tubes;
 1 catapult; 2 seaplanes.

Corrections to plan.—Fore topmast shortened. Main topmast lengthened. Derrick fitted on fore side of mainmast.
 Searchlight fitted on mainmast. Superstructure built aft side of mainmast.

CHILE.
BATTLESHIP.
Almirante Latorre (*formerly* H.M.S. Canada).



Length (extreme), 661 ft. ; Length B.P., 625 ft. ; 33,200 tons ; Speed, 23 knots ; Completed, 1915 ; Modernised at Devonport Dockyard, 1922-31. *
Armament, 10-14-in. ; 14-6-in. ; 2-3-in. A.A. ; 4-8-pr. ; 4 submerged 21-in. torpedo tubes ; 1 catapult.

* During modernisation main topmast has been raised and bridge platforms extended.

Four 4-in. A.A. have been added.

Catapult fitted on quarter deck.

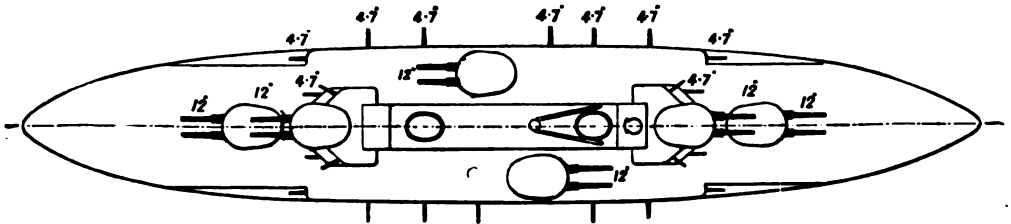
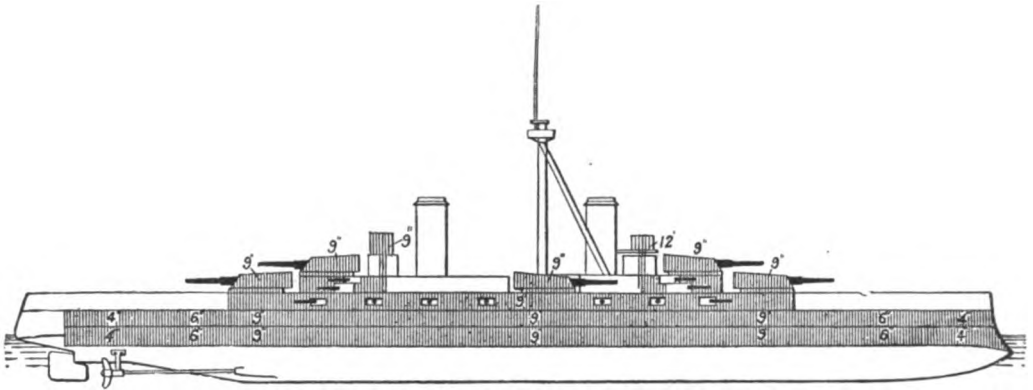
(P61)

BRAZIL.

BATTLESHIPS.

Minas Geraes.

São Paulo.



Length (extreme), 543 ft. ; Length B.P., 500 ft. ; 19,200 tons ; Speed, 21 knots ; Completed, 1909, 1910.

Armament, 12—12-in. ; 12—4.7-in. ; 6—8-pr. ; 2—3-in. A.A. ; 4 M.

Overhauled and refitted at Brooklyn Navy Yard, 1921-23, and A.A. guns installed.

Corrections to plan.—Ten main deck 4.7-in. guns removed in 1931.

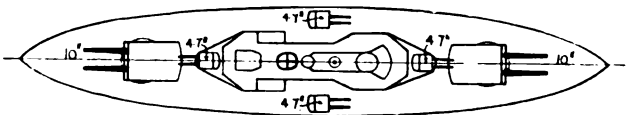
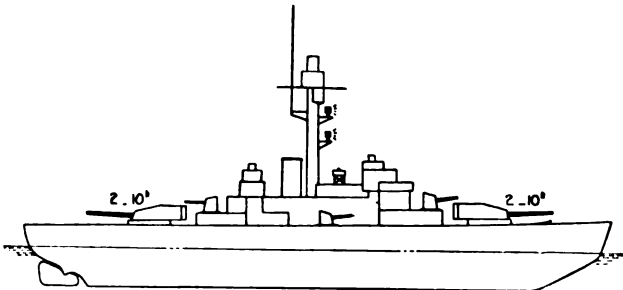
Minas Geraes reconstructed, 1938. Forward funnel removed, bridgework modified ; 2—4.7-in. guns and 2—3-in. A.A. guns added.

FINLAND.

ARMOURED GUNBOATS.

Väinämöinen.

Ilmarinen.

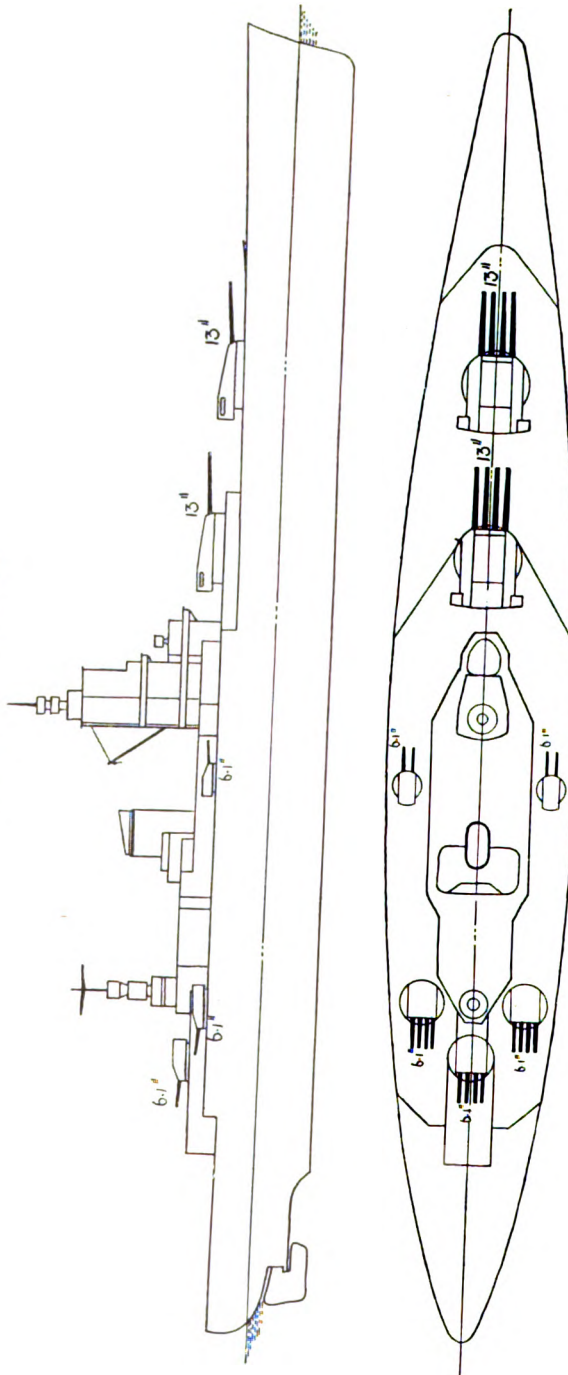


Length, 306 ft. ; 4,000 tons ; Speed, 15 knots

Armament, 4—10-in. ; 8—4-in.

Completed, 1932—33.

FRANCE.
BATTLESHIPS.
Dunkerque. Strasbourg.



Length, 706 ft. ; 26,500 tons ; Speed, about 29 knots. Completed, 1936.
Armament, 8—13-in. ; 16—5.1-in., 40 smaller ; 1 catapult ; 4 aircraft.
Catapult fitted on quarter deck at M.L., and crane fitted on port side at break of deck.

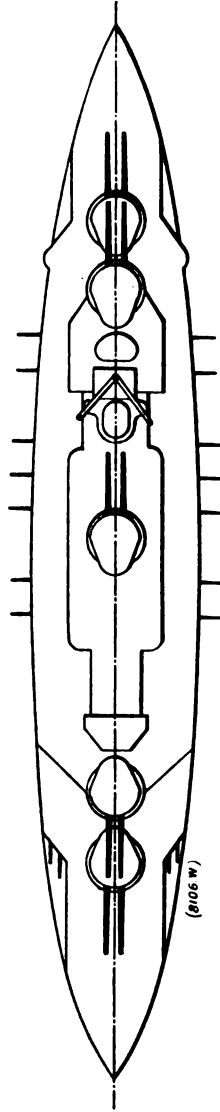
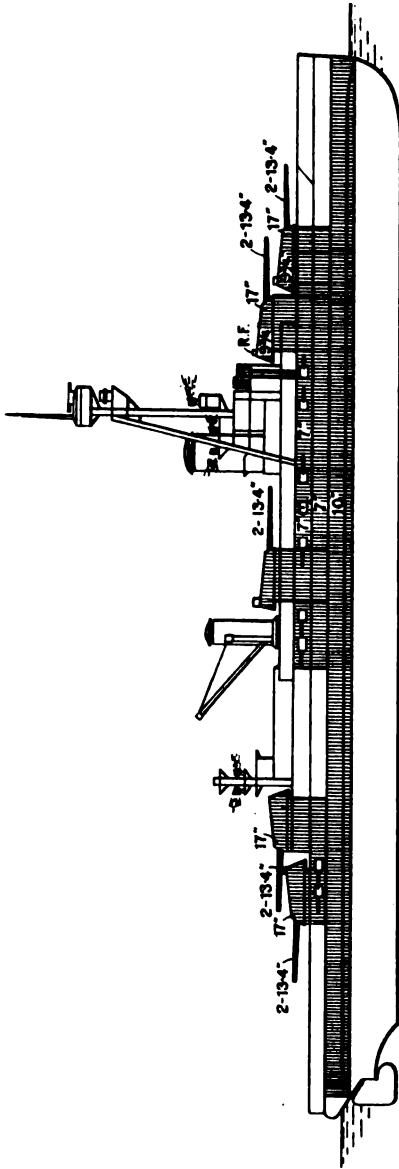
FRANCE.

BATTLESHIPS.

Bretagne.

Lorraine.

Provence.



Length (extreme), 544 ft. 6 ins. ; 22,189 tons ; Speed, 20 knots ; Completed, 1915-16 ; Modernised, 1925-27.

Converted to oil burning, 1931.

Armament, 10—13.4-in. ; 14—5.4-in. A.A. ; 8—3-in. A.A. ; 6—3-pr. ; 2—1-pr. ; 4 submerged 18-in. torpedo tubes.

Correction to plan.—The ships have now tall main topmasts and no fore topmasts.

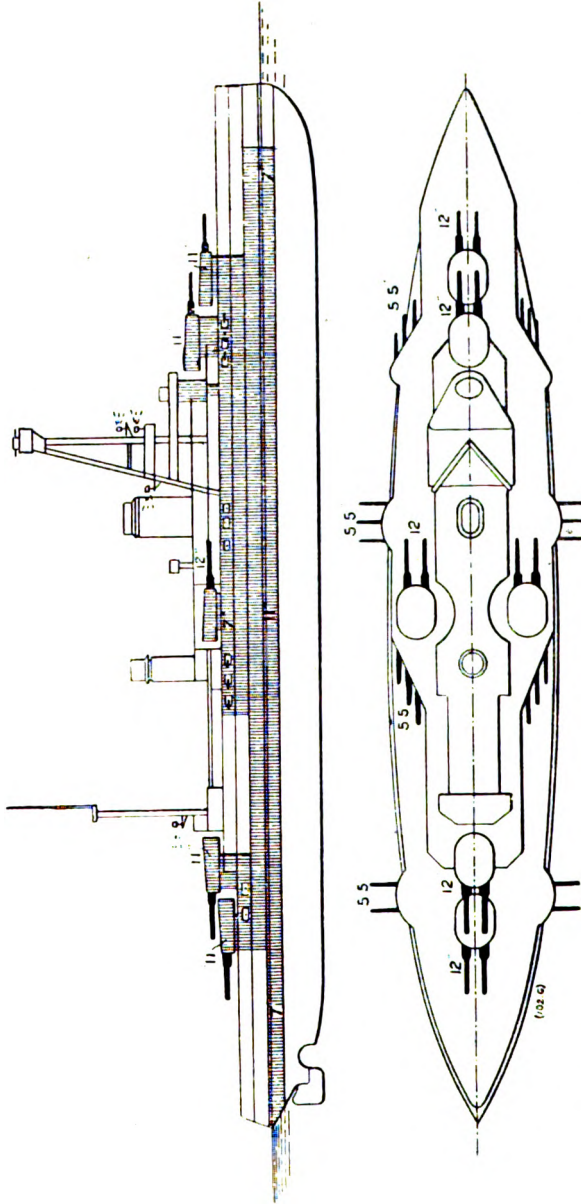
NOTE.—Lorraine has been reconstructed. The midsips turret has been removed and a hangar fitted in its place. Machinery is modernised and speed increased. Improved protection is fitted. 8—3.9-in. A.A. fitted in lieu of 8-in. A.A.'s. 2—13.4-in. guns removed.

Cranes fitted abreast funnel. Bridgework extended.

FRANCE.

BATTLESHIPS.

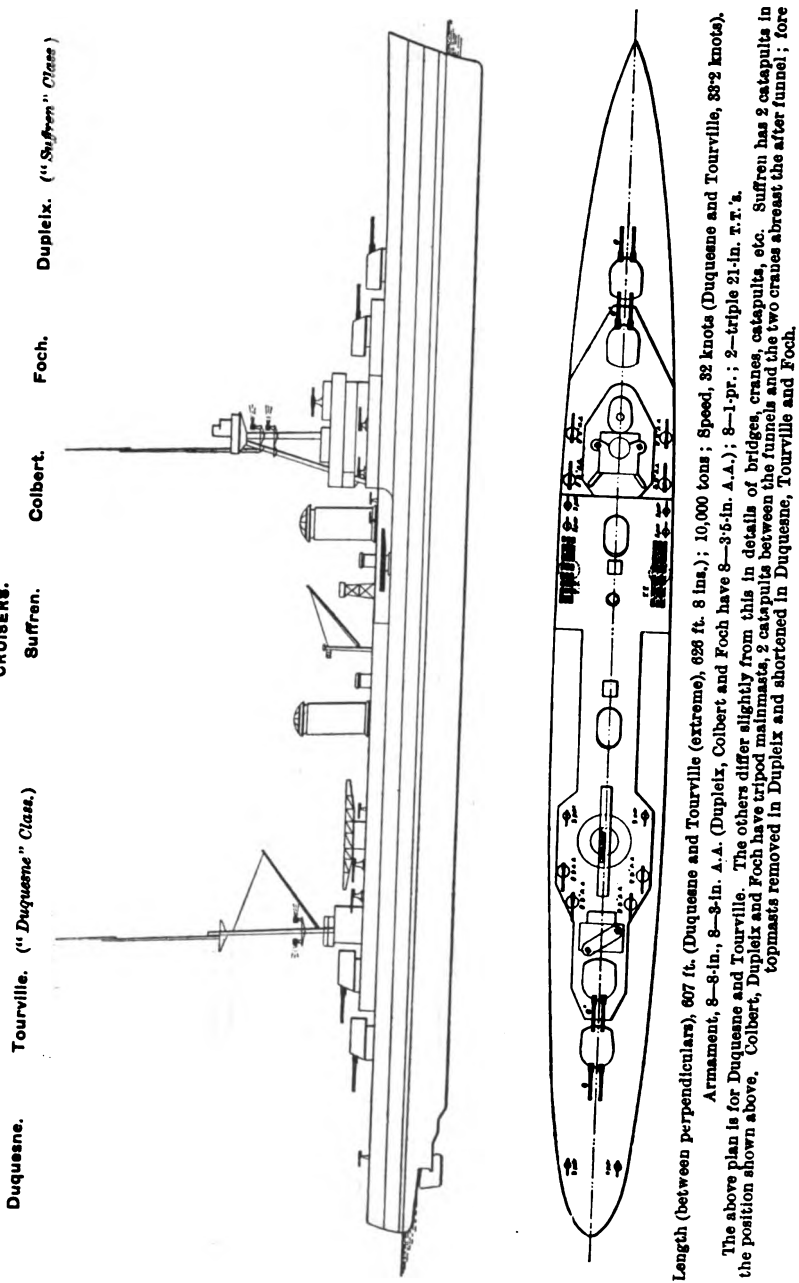
Courbet. Paris.



Length (extreme), 544 ft. 6 ins. ; Length B.P., 541 ft. 4 ins. ; 22,189 tons ; Speed, 20 knots ; Completed, 1913-14. Modernised in 1929, Converted to oil burning, 1931.
 Armament, 12-12-in. ; 29-5.4-in. ; 7-3-in. A.A. ; 4-3-pr. (Courbet has 2-3-pr.) ; 2-1-pr. ; 4 submerged 18-in. torpedo tubes.
 Corrections to plan.—Cranes fitted abreast of funnel. After funnel reduced in height.

FRANCE.

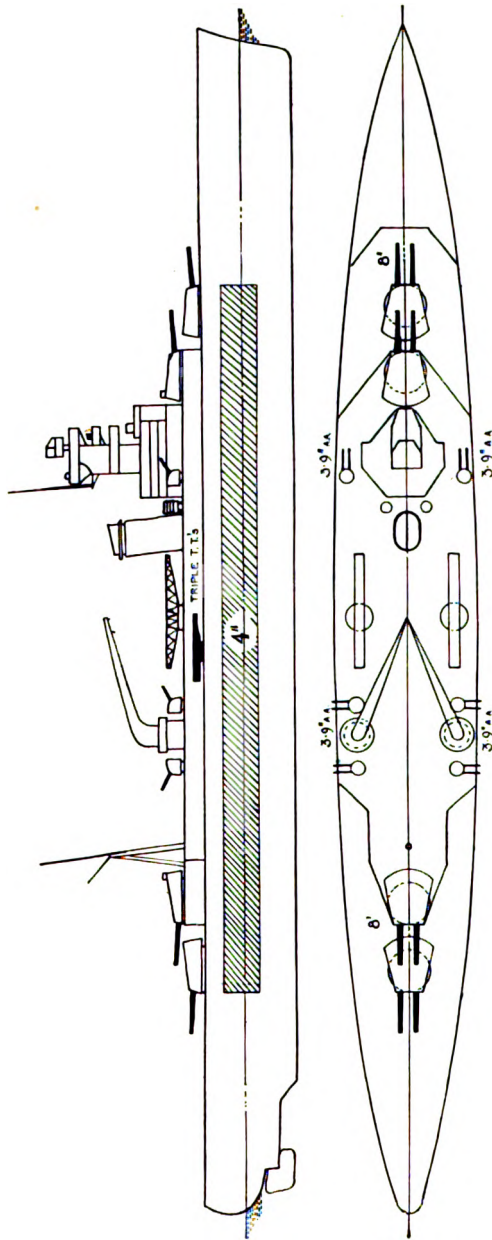
CRUISERS.



Length (between perpendiculars), 607 ft. (Duquesne and Tourville (extreme), 633 ft. 8 ins.); 10,000 tons; Speed, 32 knots (Duquesne and Tourville, 33½ knots). Armament, 8—8-in., 8—8-in. A.A. (Dupleix, Colbert and Foch have 8—3.5-in. A.A.); 8—1-pr.; 2—triple 21-in. T.T.'s.

The above plan is for Duquesne and Tourville. The others differ slightly from this in details of bridges, cranes, catapulta, etc. Suffren has 2 catapulta in the position shown above. Colbert, Dupleix and Foch have tripod mainmasts, 2 catapulta between the funnels and the two cranes abreast the after funnel; fore topmasts removed in Dupleix and shortened in Duquesne, Tourville and Foch.

FRANCE.
CRUISER.
Algérie.



Length (between perpendiculars), 607 ft.; 10,000 tons; Speed, 31 knots.

Armament, 8—8-in.; 12—3.9-in. A.A.; 8—1.5-in.; 16 M.;

1 catapult; 2 seaplanes.

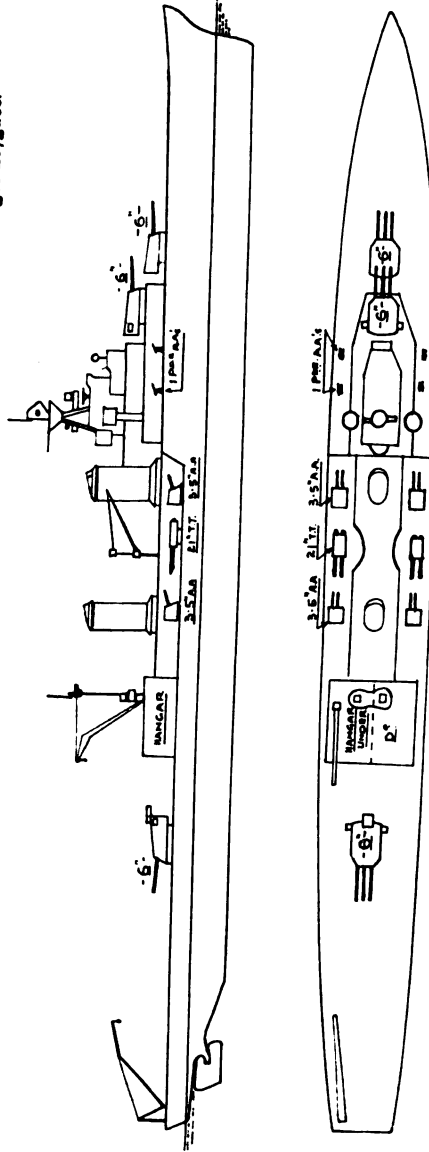
Correction to plan.—The aircraft cranes are not sided as shown, but lie fore and aft from a structure on the middle line between funnel and mainmast.

Superstructure amidships modified and two cranes fitted.

FRANCE.

CRUISERS.

Jean-de-Vienne. La Galissonnière. Marsellaise. Gloire. Montcalm. Georges Leygues.



Length (extreme), 590 ft.; 7,600 tons; Completed, 1935-37; Speed, Jean-de-Vienne and La Galissonnière 31 knots, others 32½ knots.
 Armament, 9—6-in.; 8—8.5-in. A.A.; 8—1-pdr. A.A.; 4—21-in. torpedo tubes; 2 seaplanes; 1 catapult.
 Fitted with Hein landing canvas at the stern.
 Catapult fitted on after turret.

FRANCE.

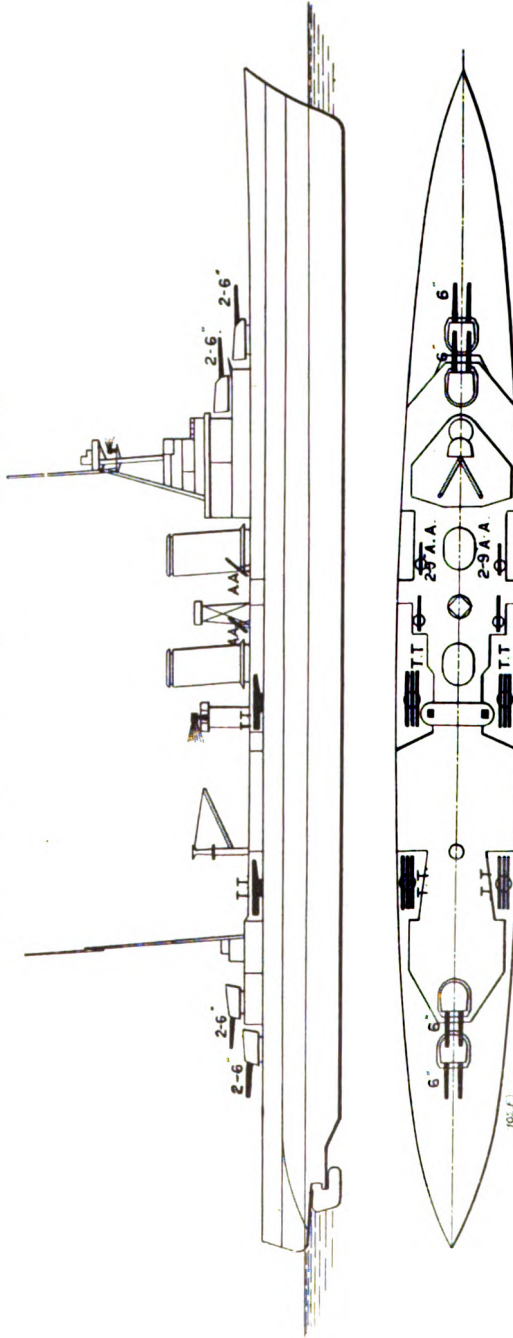
CRUISERS.

"Duguay-Trouin" Class.

La Motte Picquet.

Duguay-Trouin.

Primauguet.



Length (extreme), 594 ft. 10 ins. ; Length B.P., 575 ft. ; 7,249 tons ; Speed, 33 knots. Completed, 1926-27.

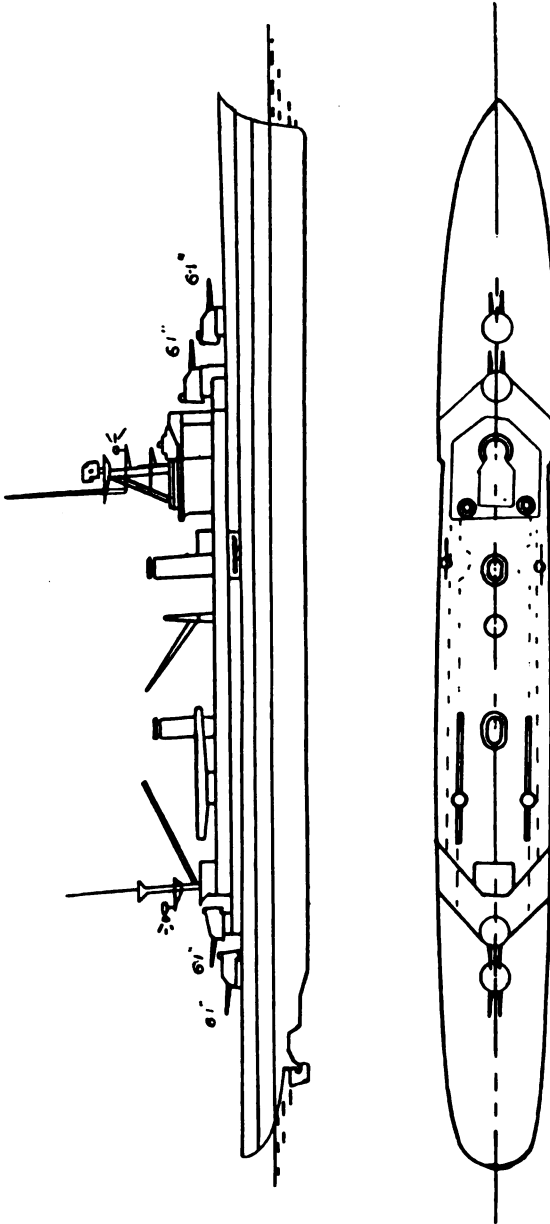
Armament, 8-6-1-in. ; 4-3-in. A.A. ; 2-3-pr. ; 2 M. ; 1 L. ; 4 triple torpedo tubes (21-7-in. torpedoes) ; catapult ; 2 seaplanes.

NOTE.—Reported to have protection to magazines.

Correction to plan.—Catapult is fitted on quarter deck.

Fore topmast removed and masthead modified.

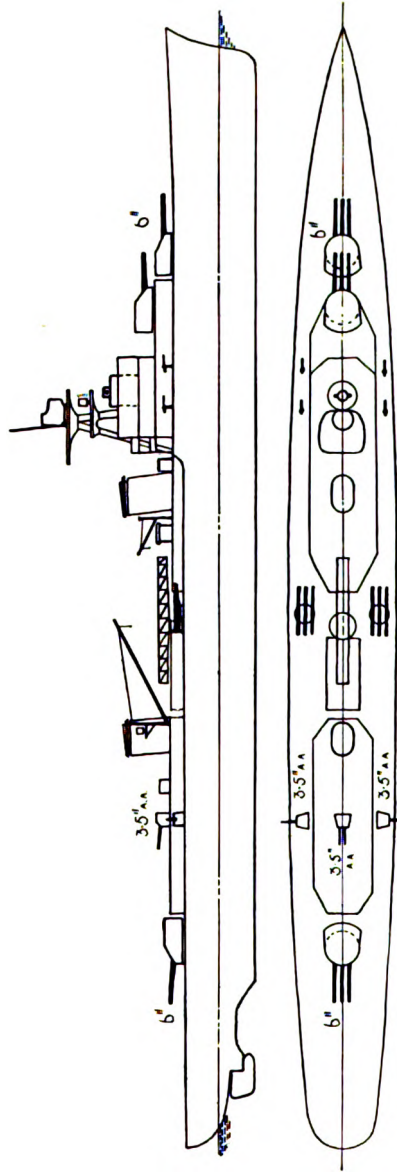
FRANCE.
TRAINING CRUISER.
Jeanne d'Arc.



Length (extreme), 557 ft. 8 ins.; 6,400 tons; Speed, 36 knots; Completed, 1931.
Armament, 8—6'1-in.; 4—3-in. A.A.; 2—1'5-in.; 2 M.; 2—21'7-in. torpedo tubes;
2 seaplanes.

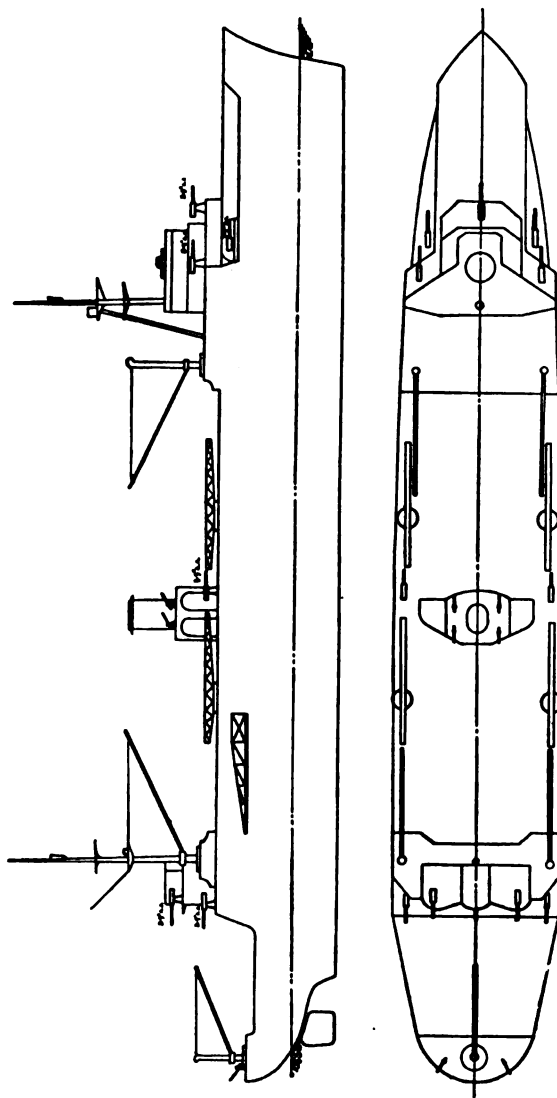
Correction to plan.—The catapults have been removed.

FRANCE.
CRUISER MINELAYER.
Emilé Bertin.



Length (extreme), 580 ft. 9 ins.; 5,886 tons; Speed, 34 knots. Completed, 1934.
Armament, 9—6-in. ; 4—3-5-in. A.A. ; 4—1-5 A.A. ; 8 M. ; 200 mines; 6—21-7-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Correction to plan. —Small pole mast fitted on fore side of after turret.

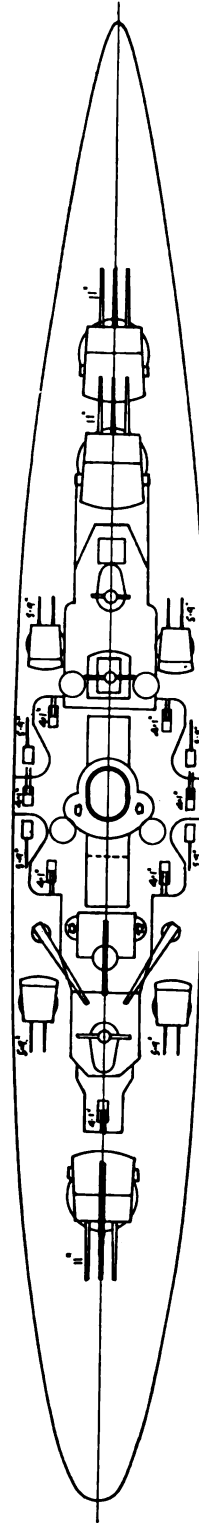
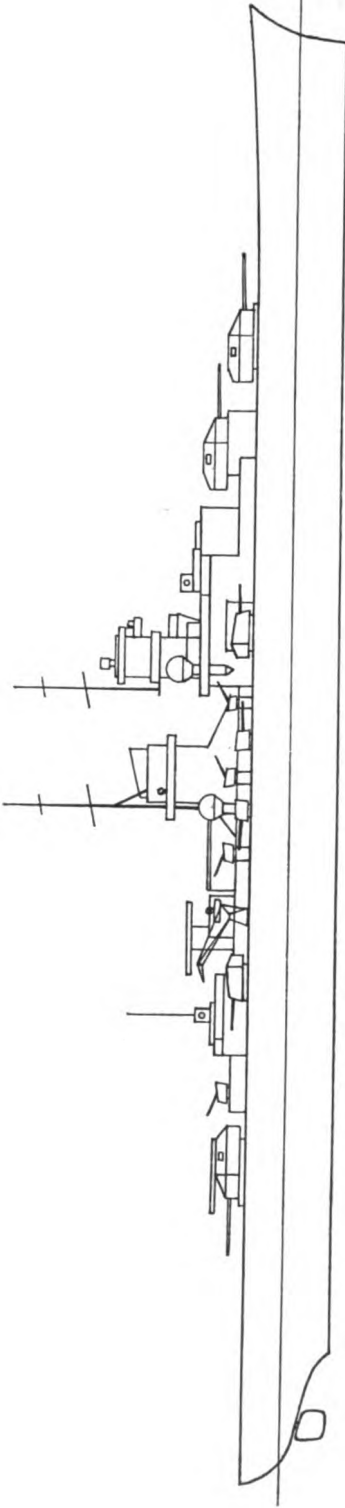
FRANCE.
AVIATION TRANSPORT.
Commandant Teste.



Length (extreme), 548 ft. 10,000 tons; Speed, 20½ knots; Completed, 1932.
Armament, 12—3½-in. A.A.; 9—8-pr. A.A.; 12 M.; 19 planes.

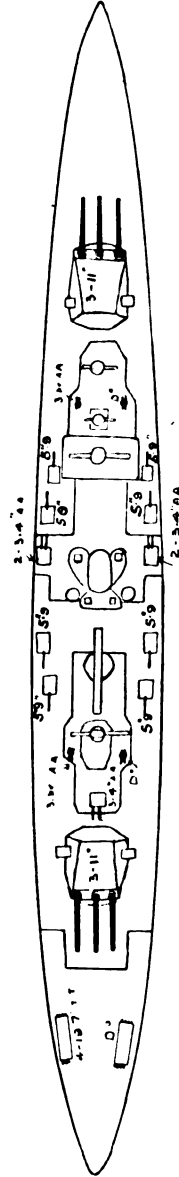
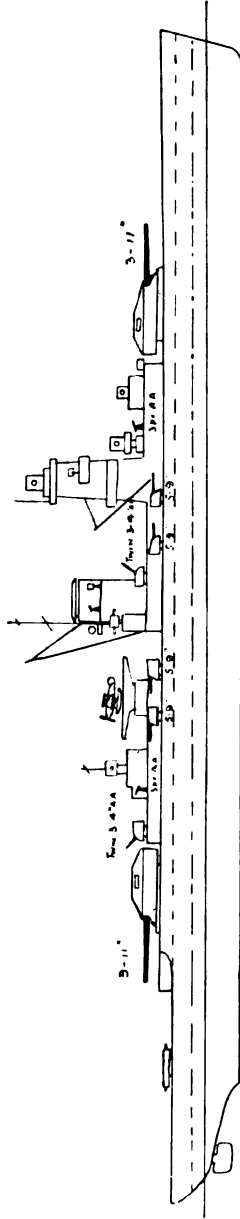
GERMANY.
BATTLE CRUISERS.

Scharnorst. Gneisenau.



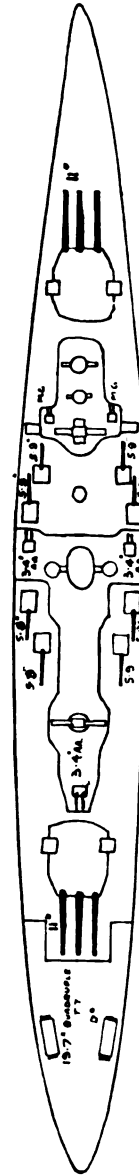
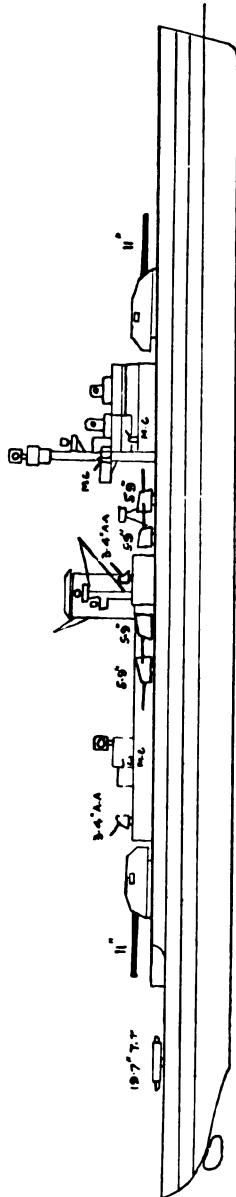
Length (extreme), 741 ft. 6 in.; 26,000 tons; 27 knots; Completed 1935-36.
Armament, 0-11-in.; 12-6-9-in. (4 twin turrets, 4 single mountings); 14-4-1-in. A.A.; 16-3-pr.; 4 aircraft; 2 catapulta.
NOTE:—Gneisenau's stempiece is vertical.

GERMANY.
ARMoured SHIP.
Admiral Scheer.



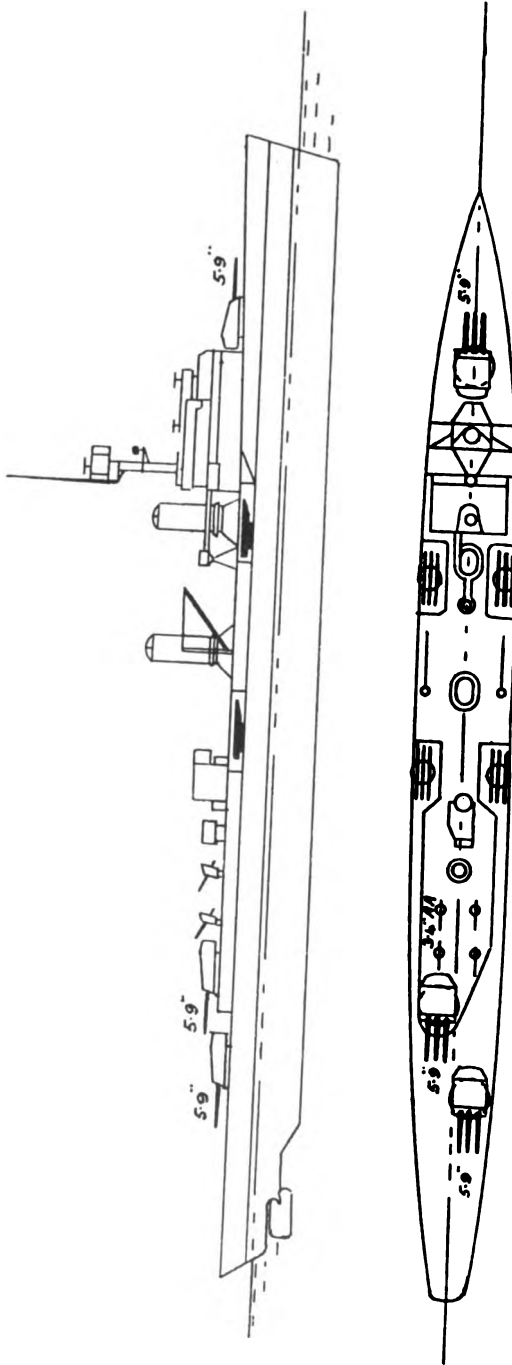
Length (extreme), 609 ft. 8 ins. ; Standard displacement, 10,000 tons ; Speed, 26 knots.
Armament, 6-11-in. ; 8-5-9-in. ; 6-4-1-in. A.A. ; 10 M.G. ; 8-21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Completed, 1935.

GERMANY.
ARMoured SHIP.
Deutschland.



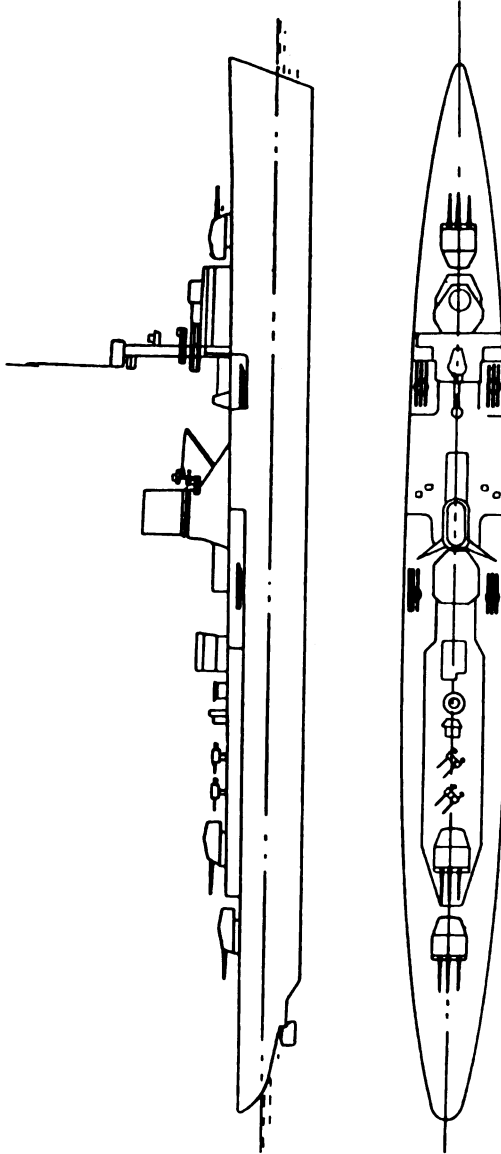
Length (extreme) 600 ft. 3 ins. ; Standard displacement, 10,000 tons ; Speed, 26 knots ; Completed, 1933.
Armament, 6-11-in. ; 8-8-in. ; 6-4.7-in. A.A. ; 8-1.5-in. A.A. ; 10 M.C. ; 8-21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Pole mainmast fitted on aft side of funnel. Catapult fitted abaft funnel. Fore topmast fitted.

GERMANY.
LIGHT CRUISERS.
Königsberg.
Karlruhe.
Köln.



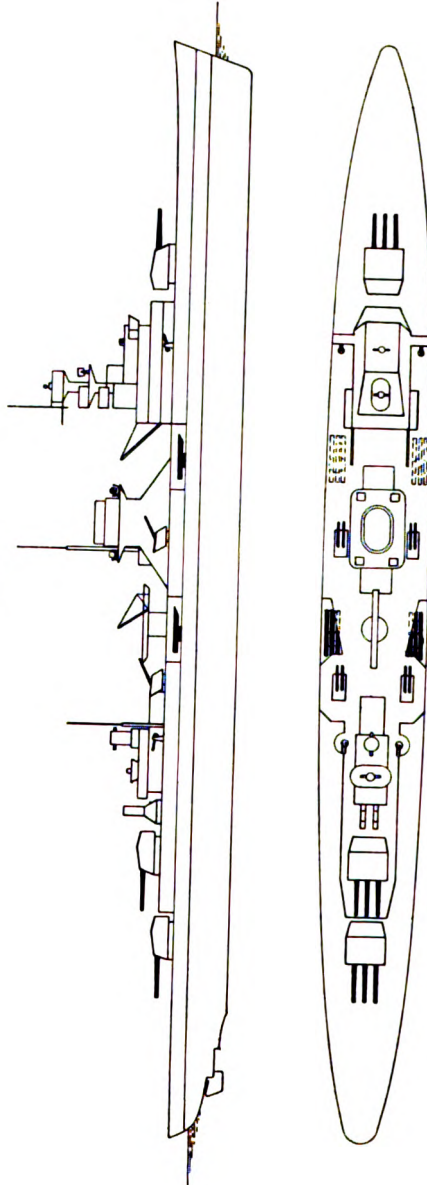
Length (extreme), 570 ft. 10 ins. ; 6,000 tons ; Speed, 32 knots ; Completed, 1929-30.
Armament, 9-6.9-in. ; 4-8.6-in. A.A. ; 4 triple 21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Pole mainmast fitted on aft side of after funnel. Catapult fitted between funnels. Crane fitted in lieu of derrick on port side.

GERMANY.
LIGHT CRUISER,
S.M. Leipzig



Length (extreme), 580 ft.; Length W.L., 543 ft. 10 ins.; 6,000 tons; Speed, 32 knots; Completed, 1931.
Armament, 8—8-in.; 8—3.5-in. A.A.; 4 triple 21-in. torpedo tubes; 1 catapult; 2 aircraft.
Corrections to plan.—Fole mainmast fitted on aft side of funnel. Catapult fitted between funnel and foremast.
The derrick is fitted on the starboard side. A crane is fitted on port side nearest funnel.

GERMANY.
LIGHT CRUISER.
Nurnberg.

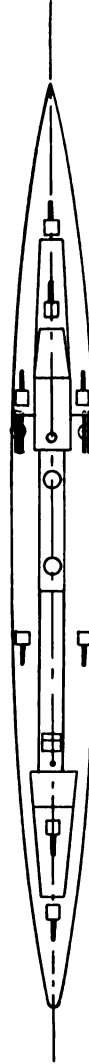
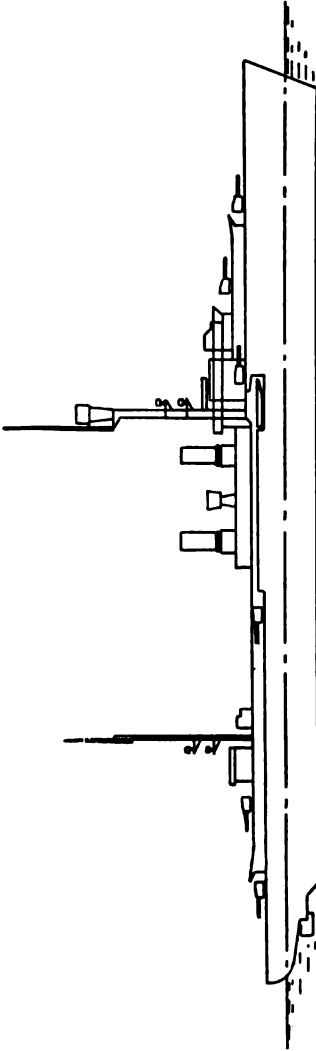


Length (on W.L.), 557 ft. 9 ins. ; 6,000 tons ; Speed, 32 knots ; Completed, 1935.
Armament, 9—6-9-in. ; 8—3-5-in. H.A. ; 8—1-5-in. A.A. ; 12—21-in. torpedo tubes ; 1 catapult ; 2 seaplanes.

GERMANY.

LIGHT CRUISER.

Emden.

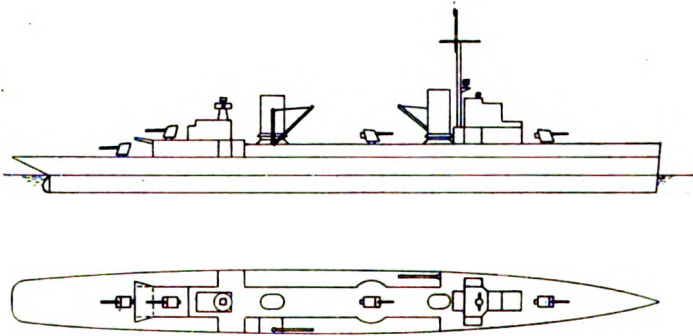


Length (extreme), 510 ft. 2 in.; 5,400 tons; Speed, 29 knots; Completed, 1925.
Armament, 8—6.9-in.; 3—3.5-in. A.A.; 4 M.G.; 4—19.7-in. torpedo tubes in twin mountings.

The 6.9-in. guns are in twin mountings, 2 forward and 2 aft.
Corrections to plan.—Fore topmast shortened. Pole mast fitted to aft side of funnel.

Superstructure added before mainmast. Mainmast shortened and surmounted by a searchlight platform.

GERMANY.
GUNNERY TRAINING SHIP.
Bremse.

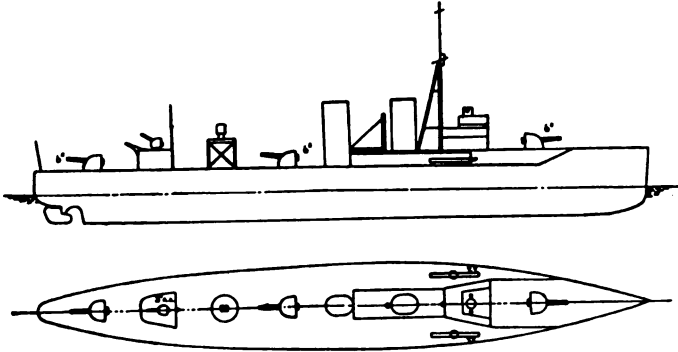


Length(extreme), 339 ft. 6 ins. ; Speed, 27 knots ; 1,460 tons; Completed, 1932.
Armament, 4—4-1-in.

GREECE.

CRUISER.

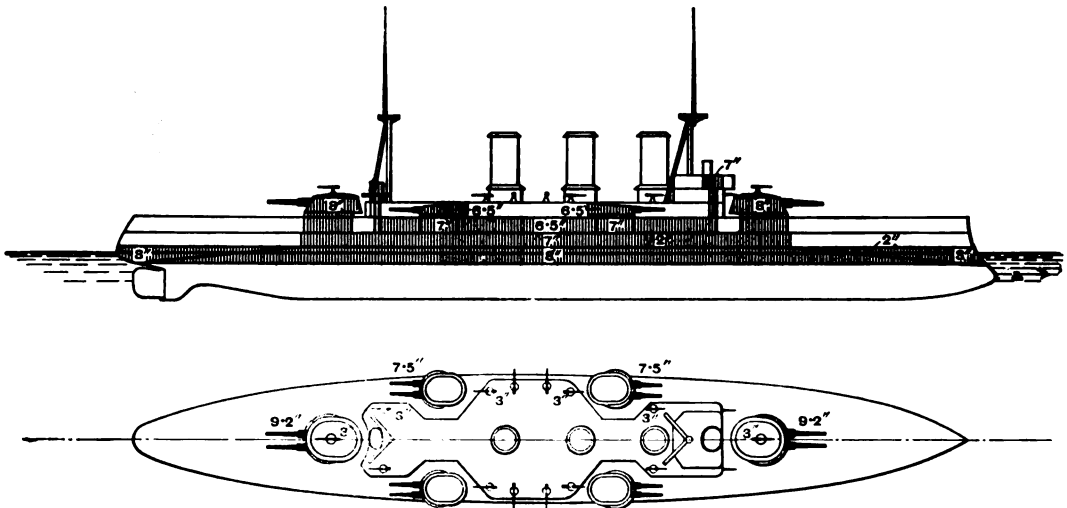
Helle.



Length, 322 ft. ; 2,083 tons ; Speed, 20 knots ; Completed, 1914 ; Reconstructed, 1929.
Armament, 2—6-in. ; 1—3-in. A.A. ; 100 mines ; 2—18-in. torpedo tubes.

ARMoured CRUISER.

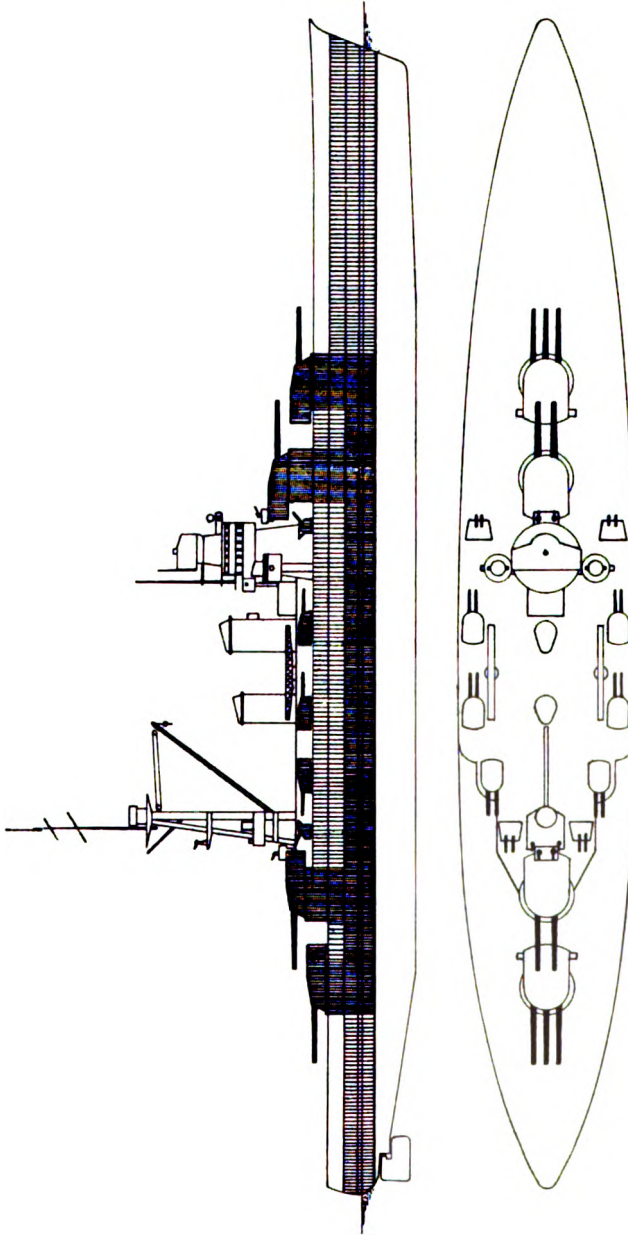
Giorgios Averoff.



Length, 462 ft. ; 9,301 tons ; Speed, 22·5 knots ; Completed, 1911. Refitted, 1927.
Armament, 4—9·2-in. ; 8—7·5-in. ; 16—3-in. ; 2—3-in. A.A. ; 4—3-pr. ; 2 M. ; 3 submerged 18-in. torpedo tubes.
Correction to plan.—Bridgework modified. Control top fitted on foremast.

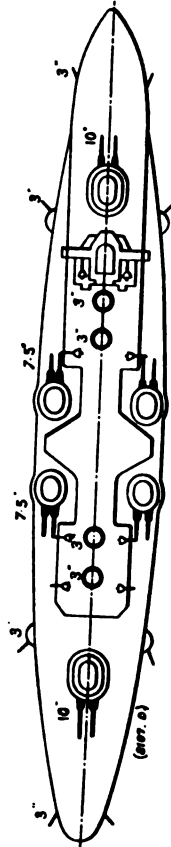
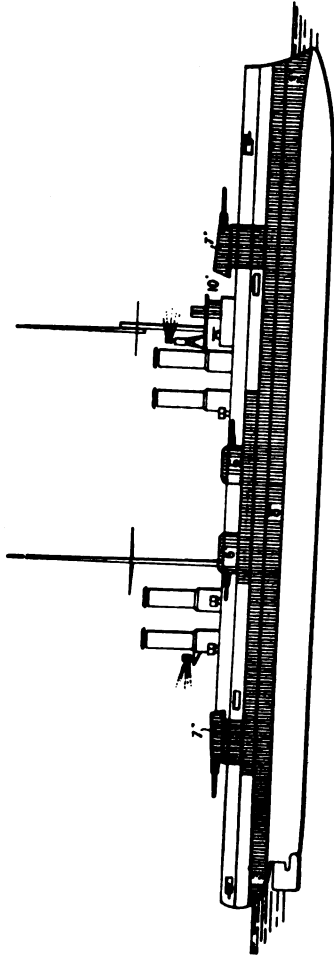
ITALY.**BATTLESHIPS.**

Conte di Cavour.	Giulio Cesare.	Andrea Doria.	Caio Duilio.
	(After modernisation.)		



Length (extreme), 611 ft. 6 ins.; 23,632 tons; 27 knots; Completed, 1914-15; Modernised, 1937.
 Armament, 10—12½-in.; 12—4.7-in.; 8—3.9-in. A.A.; 20 A.A. M.G.; 4 aircraft; 2 catapults.

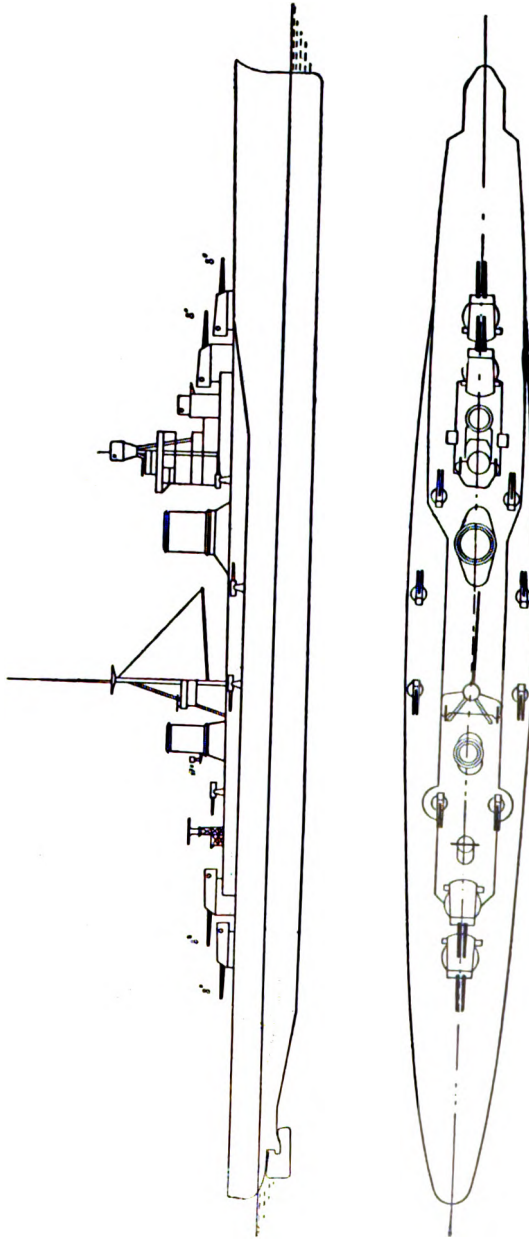
ITALY.
CRUISER.*
S. Giorgio.



Length (extreme), 462 ft. 2 ins. ; Length B.P., 429 ft. 10 ins. ;
Speed, 22 knots ; 9,232 tons ; Completed, 1910.
Armament. 4—10-in. ; 8—7.5-in. ; 10—3-in. A.A. ; 2—3-pr. 6 M. ; 2 L. ; 2—18-in. torpedo tubes.
* Classified as a Battleship, 2nd class, in Italian official texts.

ITALY.

CRUISER.

*Modified "Trento" Class.***Bolzano.**

Length (extreme), 646 ft. 3 ins.; 10,000 tons; Completed, 1892; Speed, 35 knots.
 Armament, 8—8-in. ; 16—3·9-in. A.A. ; 8—1·5 M.A.A. ; 8—5 M.A.A. ; 1 catapult ; 2 aircraft ; 4—21-in. torpedo tubes.

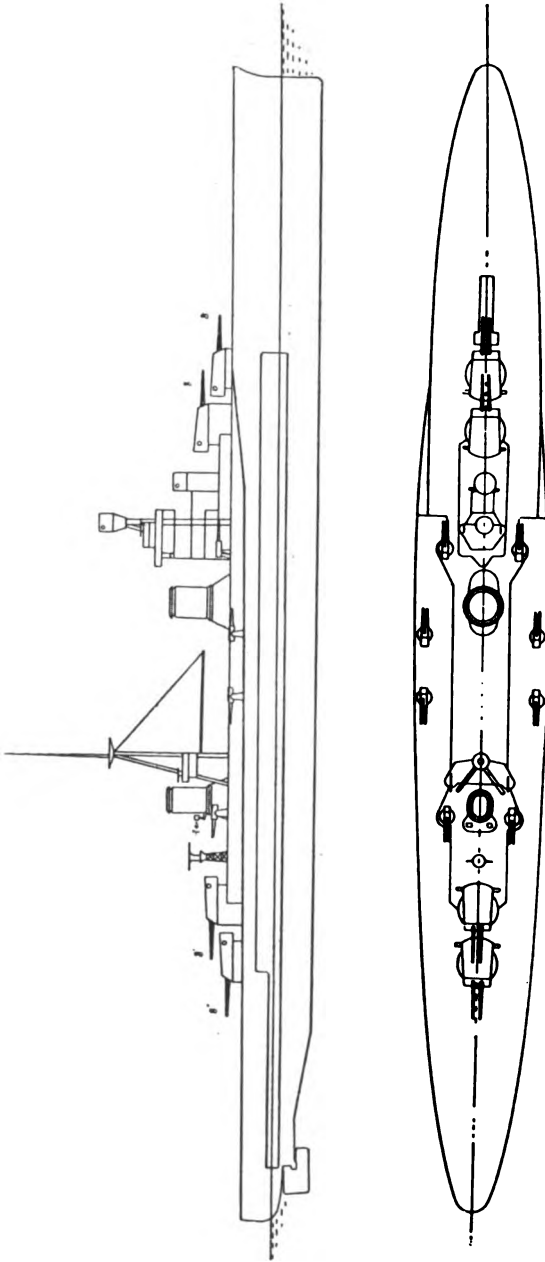
Corrections to plan.—Forward superstructure faired into funnel. Clinker screens fitted to funnels. Catapult fitted amidships.

ITALY.

CRUISERS.

"Zara" Class.

Pola. Zara. Flume. Gorizia.



Length (extreme), 599 ft. 9 ins. ; 10,000 tons ; Speed, 32 knots.

Armament, 8—8-in. ; 12—3½-in. ; 8—1½-in. A.A. ; 8—½ M.A.A. ; 1 catapult ; 2 aircraft.

Corrections to plan.—Forward superstructure faired into funnel. Clinker screens fitted to funnels.

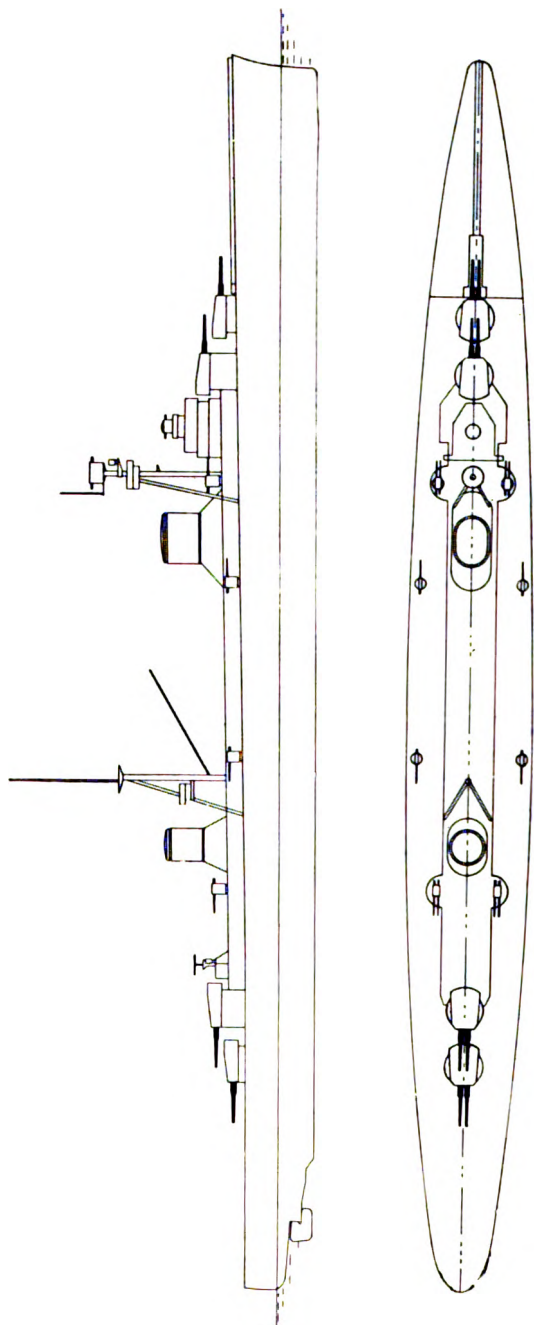
ITALY.

CRUISERS.

"Trento" Class.

Trento.

Trieste.

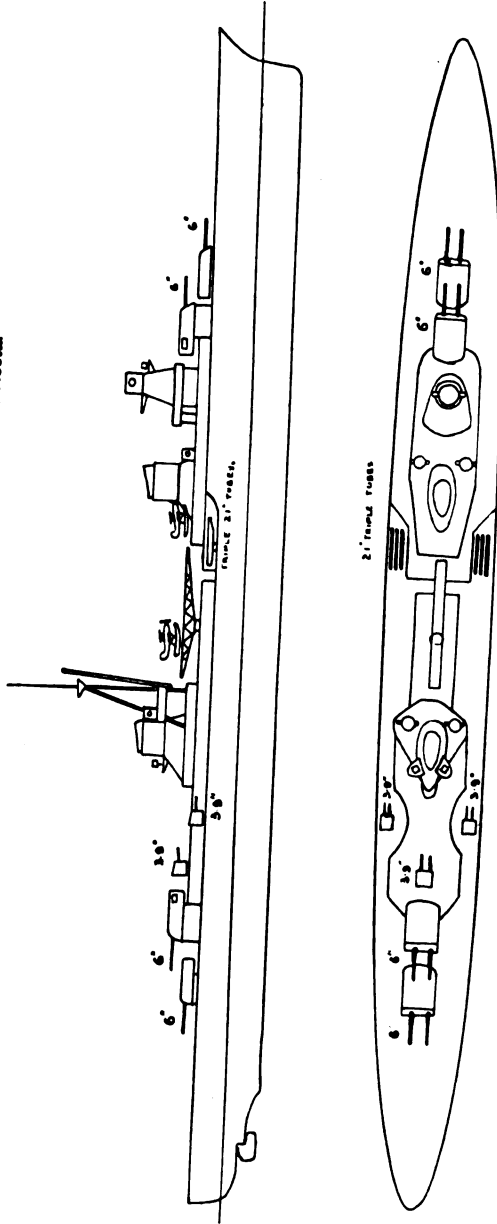


Length (extreme), 646 ft. 2 in. ; 10,000 tons ; Speed, 36 knots ; Completed, 1929.

Armament, 8-8-in. ; 12-3-9-in. ; 4-1-97-in. A.A. ; 8-5 A.A. M.G. ; 4 twin torpedo tubes 21-in. 1 catapult ; 2 aircraft.

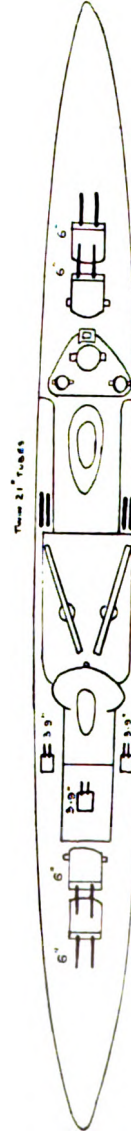
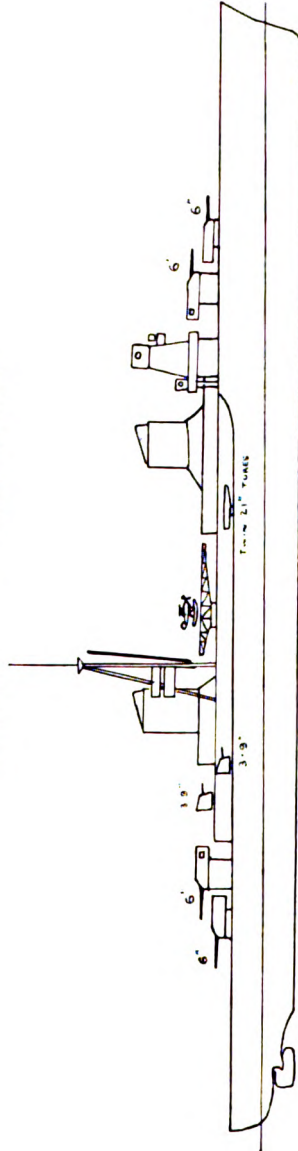
Correction to plan.—The 4-in. guns between the funnels are twin guns. Fore topmast removed.

ITALY.
CRUISERS.
"Atendolo" Class.
Eugenio di Savoia.
Filiberto Duca d'Aosta.



Armament, 8—6-in. ; 6—8-in. ; 8—1.5-in. A.A. ; 2 triple 21-in. torpedo tubes ; 1 catapult ; 3 aircraft.
Length (extreme), 610 ft. 3 ins. ; 7,283 tons ; Speed, 37 knots.

ITALY.
CRUISERS.
"Condottieri" Class.
Montecuccoli. Muzio Attendolo.



Length (extreme), 597 ft. 9 ins.; 6,941 tons; Speed, 37 knots: Completed, 1935.
Armament, 8-6-in.; 6-3-9-in. A.A.; 8-1-5-in. A.A.; 8-5-in. A.A. M.G.; 2 twin 21-in. torpedo tubes; 1 catapult; 2 aircraft.
Correction to plan.—1 catapult fitted on M. L.

ITALY.

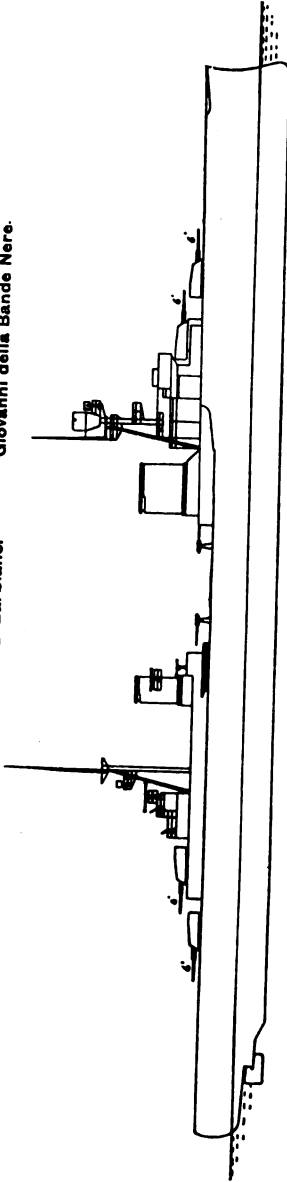
CRUISERS.

"Condottieri" Class.

Armando Diaz.*
Luigi Cadorna.*

Alberto di Guisano.
Alberico di Barbiano.

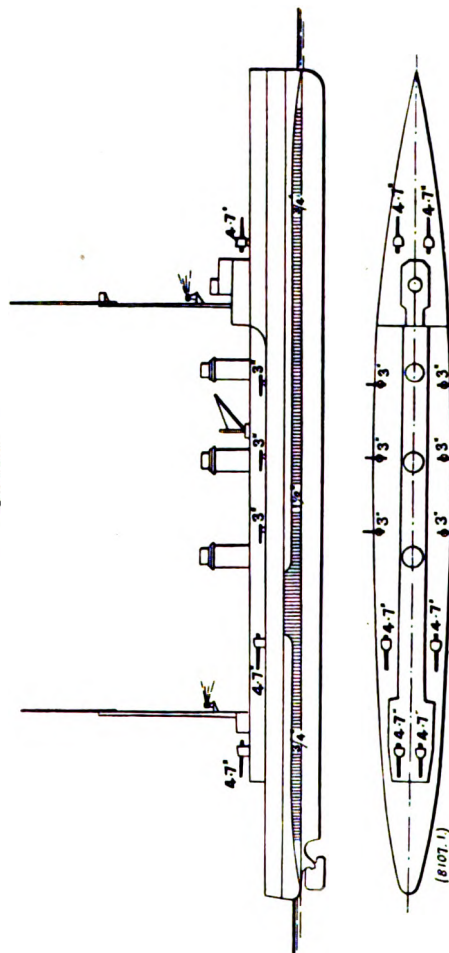
Bartolomeo Colleoni.
Giovanni della Bande Nere.



Length (extreme), 555 ft. 5 in.; 5,093 tons • (554 ft. 6 in., 5,008 tons); Speed, 37 knots; Completed, 1931-33.
Armament, 8—6-in.; 6—3-9-in. A.A.; 8—1-6-in. A.A.; 8—5 in. A.A. M.G.; 4 torpedo tubes 21-in.; 1 catapult and 2 seaplanes.

Corrections to plan: The bridge and foremast have been modified. The after twin 8-9-in. A.A. gun is at the superstructure level on a raised platform. In the Armando Diaz and Luigi Cadorna the mainmast is forward of the after funnel, the torpedo tubes are abreast the forward funnel, and the positions of the twin A.A. guns are reversed, the foremost gun being at forecastle deck level and the two after guns at upper deck level. The catapult is fitted between mainmast and X turret in Diaz and Cadorna; on forecastle in other ships.

ITALY.
LIGHT CRUISER.*
Quarto



Length (extreme), 431 ft. 9 ins. ; Length B. P., 413 ft. 5 ins. ; Speed, 28 knots ; 2,903 tons ; Completed, 1913.
Armament, 6—4.7-in. ; 4—3-in. ; 2—1.67-in. A.A. ; 2 above-water 18-in. torpedo tubes ; 126 mines.

* Classified as Scout in Italian official list.

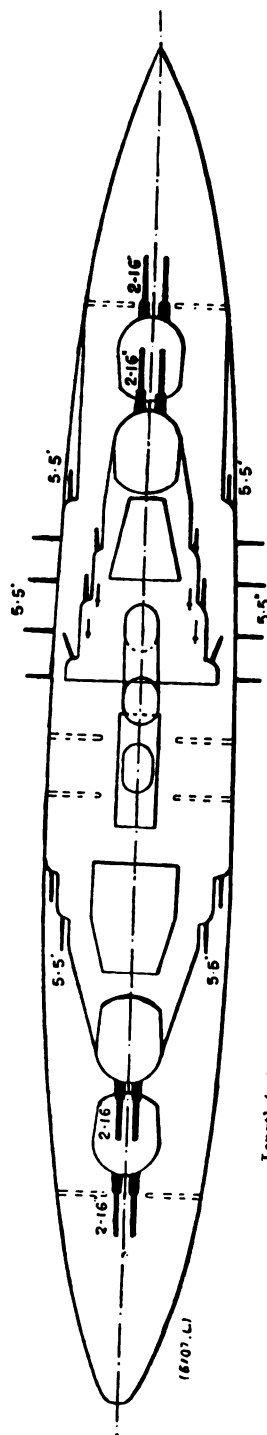
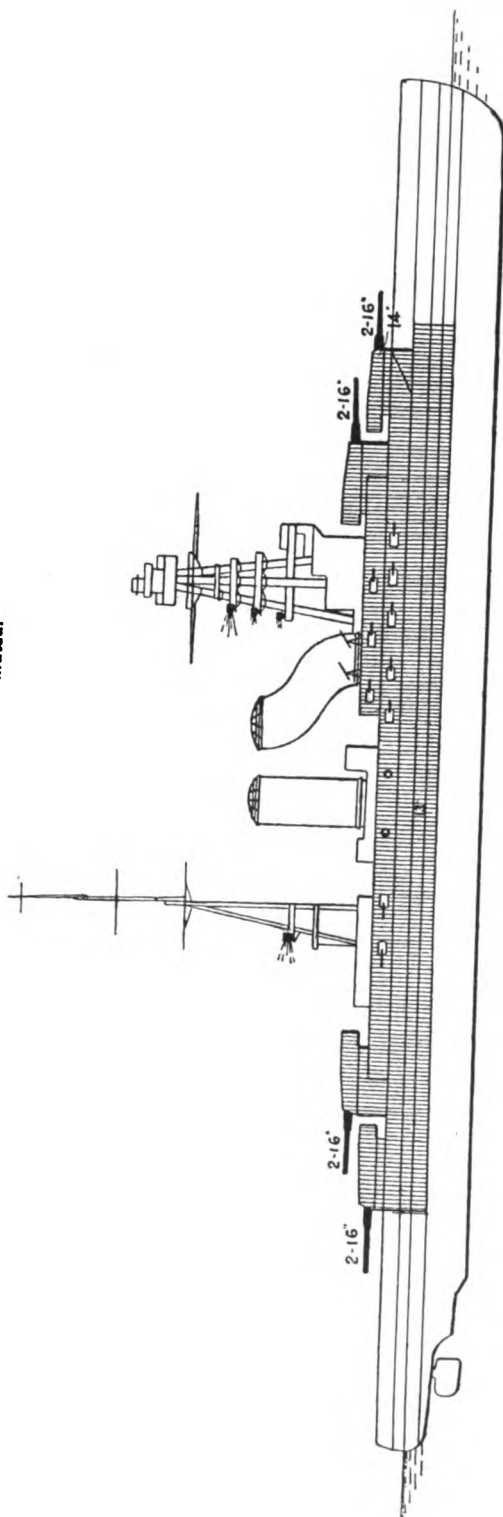
JAPAN.

BATTLESHIPS.

"Nagato" Class.

Nagato.

Mutsu.



Length (extreme), 700 ft. ; Length B.P., 660 ft. 7 in. ; Speed, 32 knots ; 32,720 tons ; Completed, 1920-1921.
 Armament, 8-16 in. ; 20-6-6 in. ; 6-6 in. A.A. ; 1 catapult, 3 aircraft.
 Bridgework extended. Superstructure built round mainmast and "X" turret.
 Main topgallant mast removed.

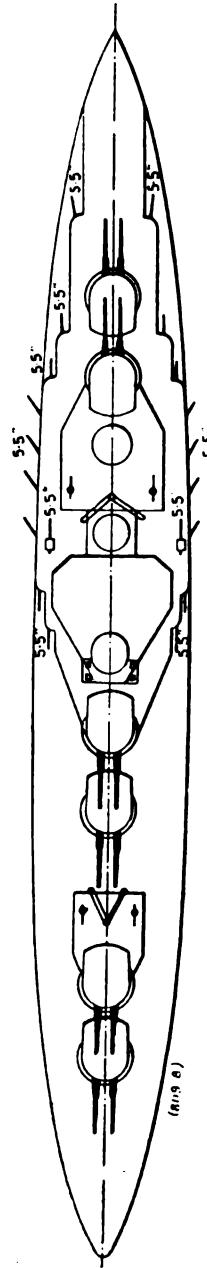
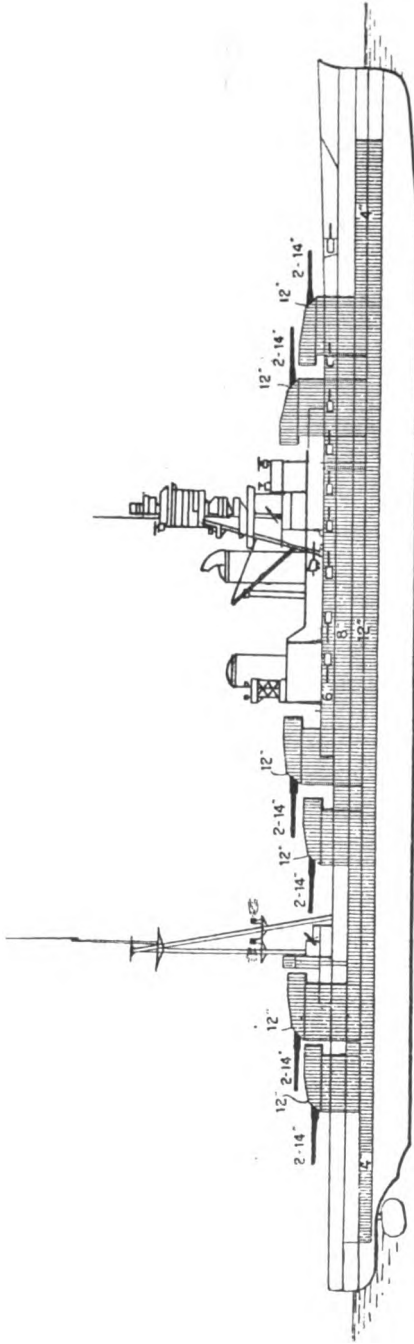
JAPAN.

BATTLESHIPS.

"Fuso" Class.

Ise.

Hyuga.



Length (extreme), 683 ft.; Length B.P., 640 ft.; Speed, 23 knots; 29,000 tons; Completed, 1917-18.

Armament, 12-14-in.; 18-5-5-in.; 8-5-in. A.A.; 3 seaplanes; 1 catapult.

Correction to plan.—Fore topmast and foremost funnel removed. Superstructure built round mainmast. Main topgallant mast removed.

JAPAN

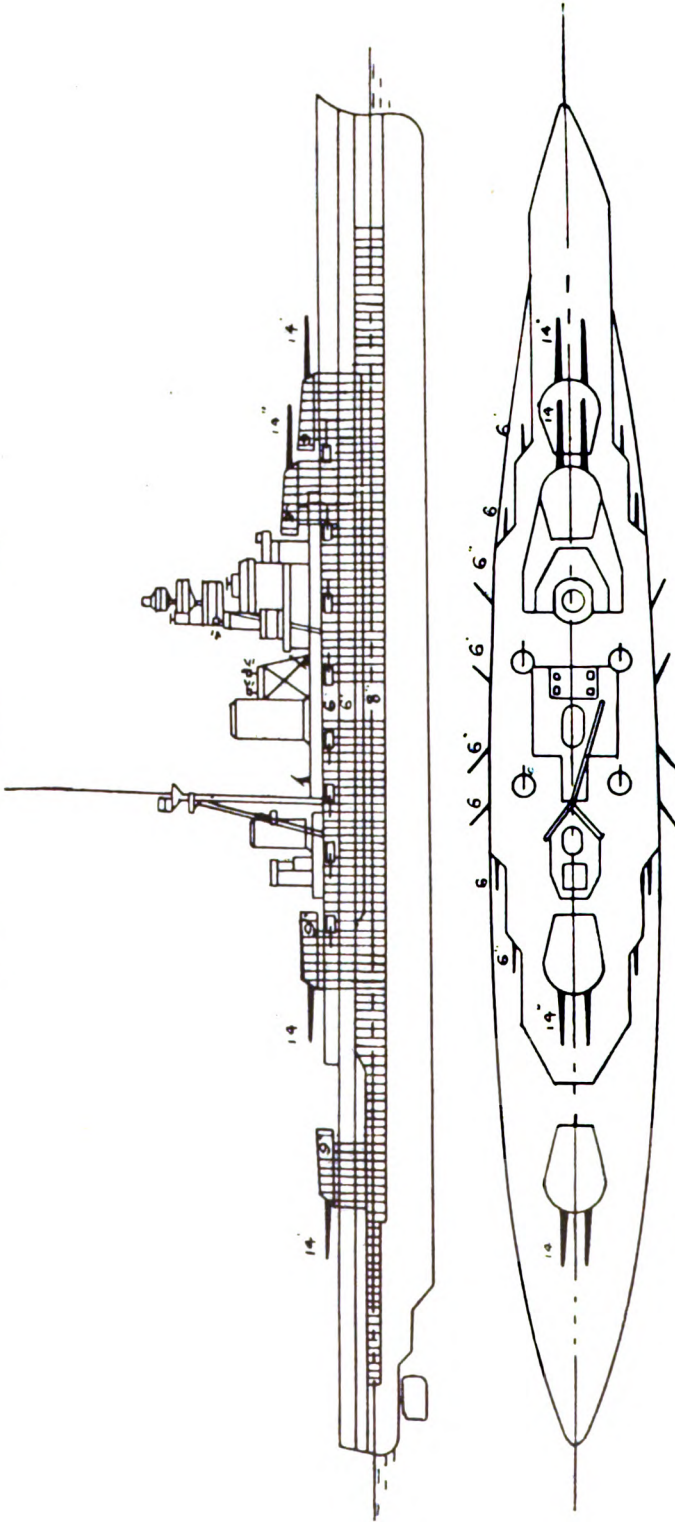
BATTLESHIPS.

"Kongo" Class.

Haruna.

Kirishima.

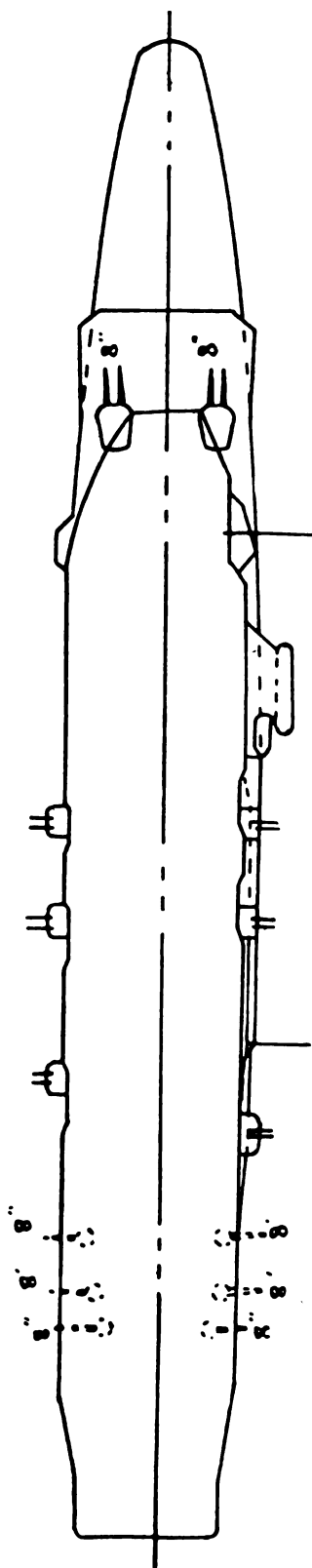
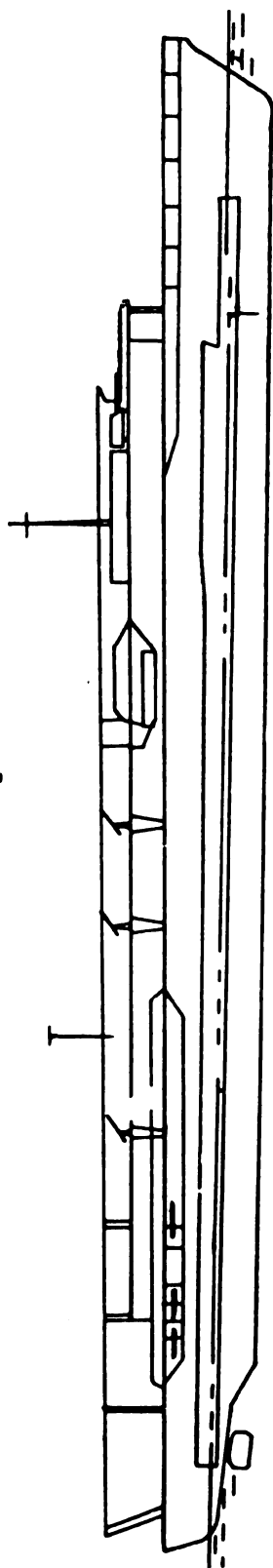
Kongo.



Length (extreme) 704 ft. ; Speed, 26 knots ; 29,330 tons ; Completed, 1914-15 ; Modernised, 1925-31. Reconstructed, 1935-36.
 Armament, 8—14-in. ; 16—6-in. ; 8—5-in. A.A. ; 4 submerged 21-in. torpedo tubes ; 3 aircraft ; 1 catapult.

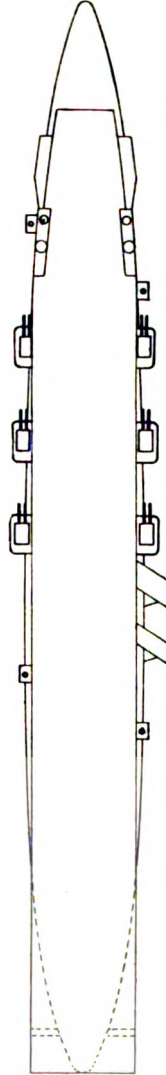
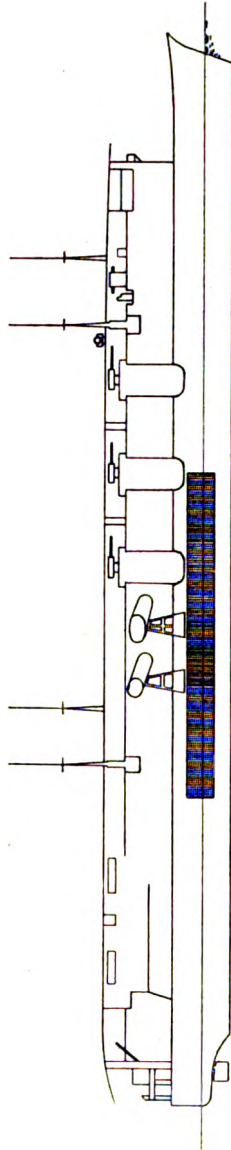
History of this class has been converted to a Training Ship in accordance with the London Naval Treaty.
 Corrections to plan.—The A.A. guns are in twin mountings. Derrick fitted between after turrets. Haruna and Kongo have funnels of equal height.

JAPAN
AIRCRAFT CARRIER.
Akagi.



Length (between perpendiculars), 763 ft. ; 26,900 tons ; Speed, 28.5 knots ; Completed, 1927.
Armament, 10—4-in. ; 12—4.7-in. A.A. Accommodation for 50 planes.
Corrections to plan.—Superstructure added and flight deck extended forward.

JAPAN.
AIRCRAFT CARRIER.
Ryujo.



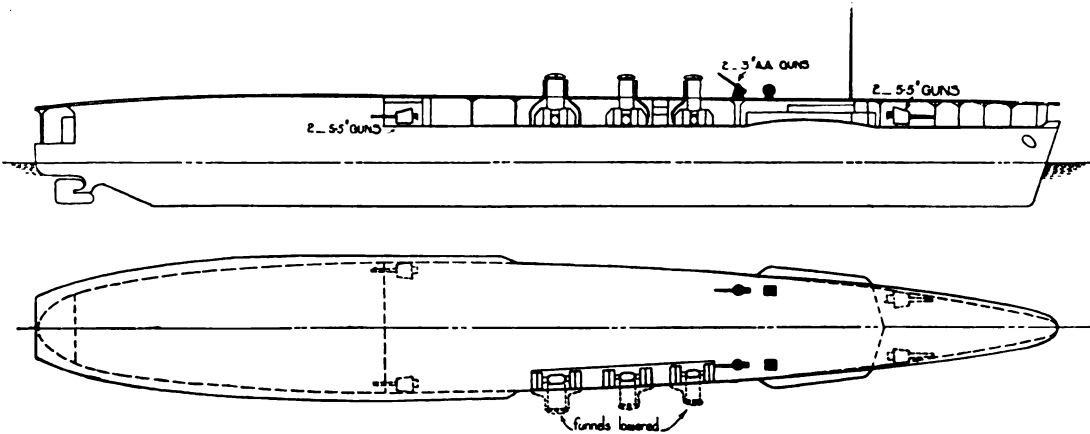
Length (on W.L.), 548 ft.; 7,100 tons; Speed, 26 knots; Completed, 1933.
Armament, 12—6.1-in. A.A. Accommodation for 24 planes.

(P97)

JAPAN.

AIRCRAFT CARRIER.

Hosho

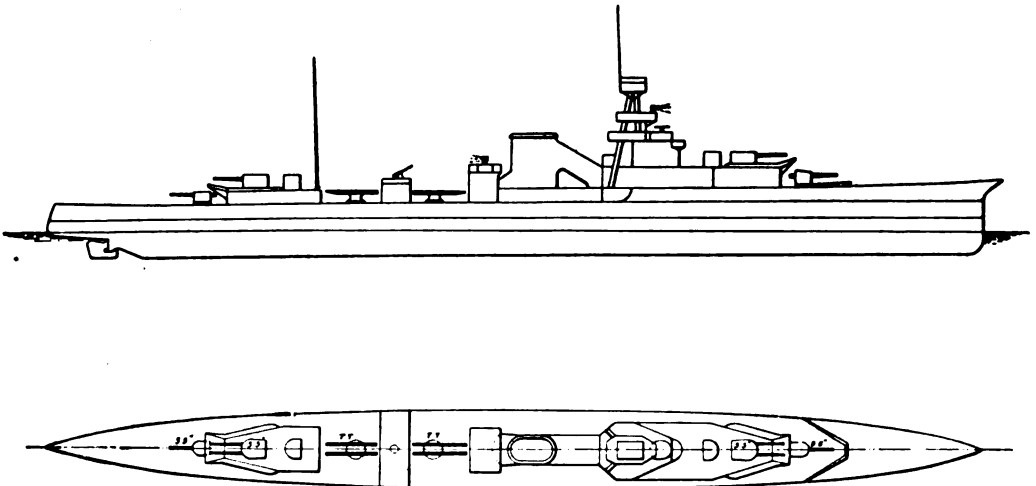


Displacement, 7,470 tons; Length B.P., 510 ft.; Speed, 25 knots; Completed, 1922.
Armament, 4—5.5-in.; 2—3-in. A.A.; Carries about 20 planes; Fitted with gyro-stabiliser.
Funnels hinge outboard.

JAPAN.

LIGHT CRUISER

Yubari.

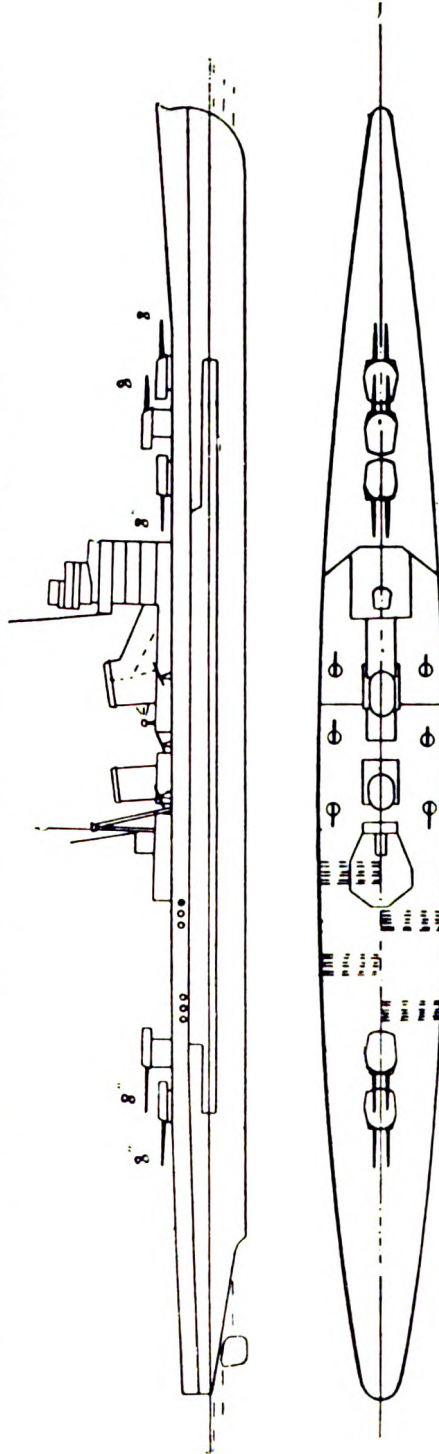


Length (extreme), 465 ft.; Length B.P., 435 ft.; 2,890 tons; Speed, 33 knots. Completed, 1923.
Armament, 6—5.5-in.; 1—3-in. A.A.; 2 M.; 2 twin 21-in. torpedo tubes; 34 mines.
Correction to plan.—Masts and funnel raked aft.

JAPAN.

CRUISERS

Nachi.	Myoko.	Ashigara.	Haguro.	(<i>"Nachi" Class.</i>)	Atago.*	Takao.*	Chokai.*	Maya.*	(<i>"Takao" Class.</i>)
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Length (extreme), 650 ft. (*"Takao" Class*); 640 ft. (*"Nachi" Class*); *"Nachi" Class*, 10,000 tons; *"Takao" Class*, 9,850 tons; Speed, 33 knots. Armament, 10—8-in.; 8—4-7-in. A.A.; 12—21-in. torpedo tubes; 2 catapults; 4 aircraft.

* These have 4—4-7-in. A.A., and 8—21-in. torpedo tubes.

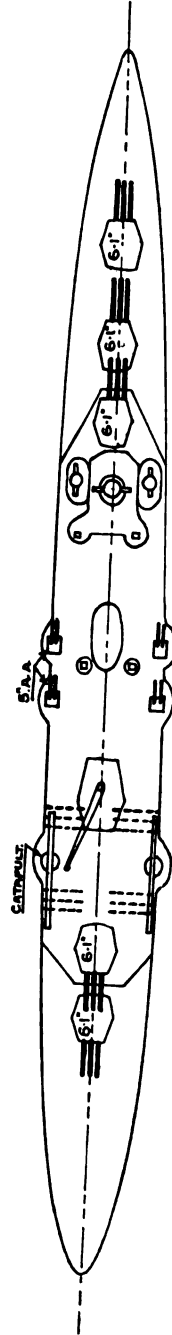
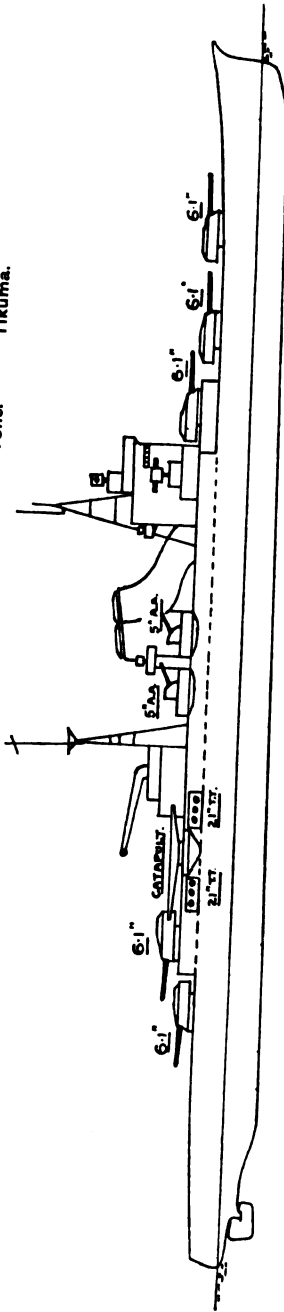
Corrections to plan.—In the *"Takao" Class* the after funnel is vertical, and the torpedo tubes are beneath the funnels on a deck higher. The four 4-7-in. A.A. guns are also a deck higher. Foremast has four braced legs. In the *"Nachi" Class* the foremost pair of 4-7-in. A.A. guns are a deck higher. Catapults fitted abaft mainmast.

JAPAN.

CRUISERS.

"Mogami" Class

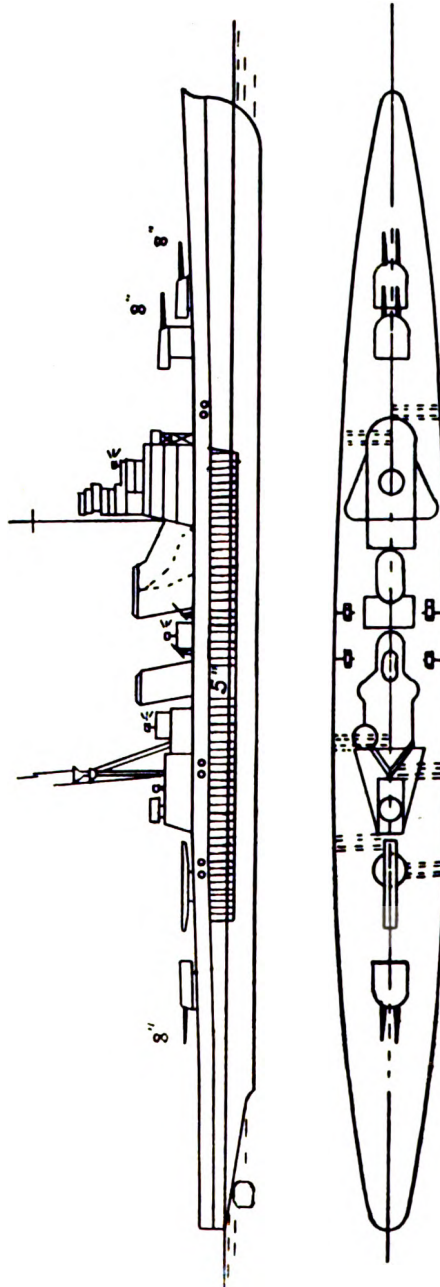
Mogami. Mikuma. Suzuya. Kumano. Tone. Tikuma.



Length (extreme), 640 ft. ; 8,500 tons ; Speed, 33 knots.
Armament, 15—6.1 in. ; 8—5-in. A.A. ; 12—21-in. torpedo tubes ; 2 catapults, 4 aircraft.

Mogami and Mikuma completed, 1935 ; Suzuya, 1936 ; Kumano, 1937 ; Tone and Tikuma still under construction.

JAPAN.
CRUISERS,
"Furutaka" Class,
Aoba. Kinugasa.



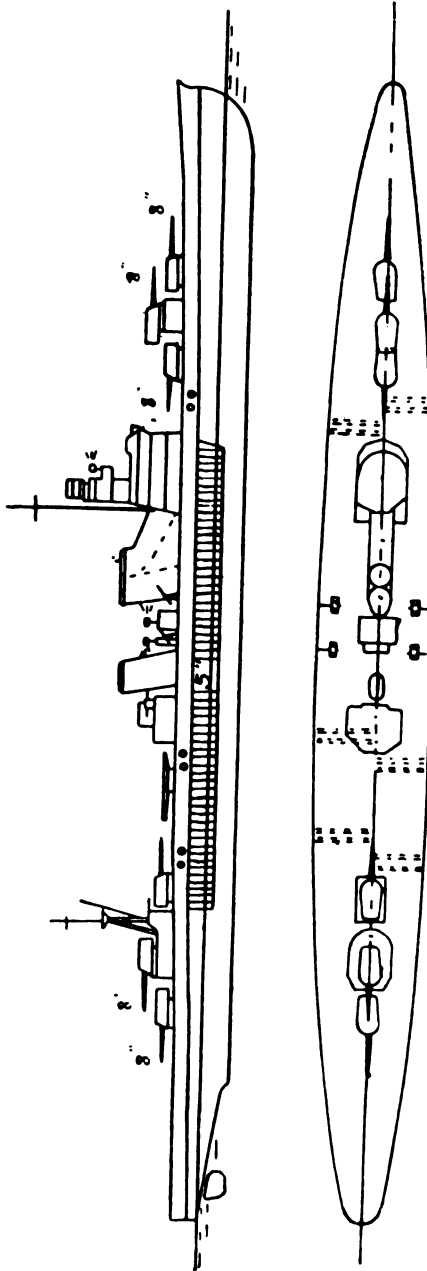
Length (extreme), 505 ft. ; 7,100 tons ; Speed, 33 knots ; Completed, 1927.
Armament, 6-8-in. ; 4-4-7-in. A. A. ; 12-21-in. torpedo tubes ;
1 catapult ; 2 aircraft.
Correction to plan.—The tops of the funnels are square to the funnels.
The pole mast is raked.

JAPAN.

CRUISERS.

"Furutaka" Class.

Furutaka. Kako.



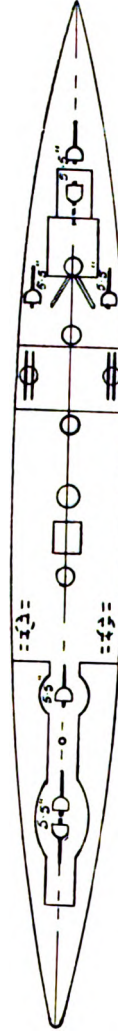
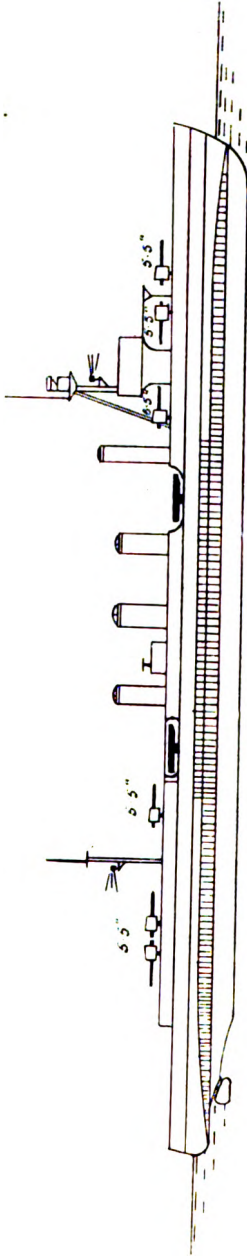
Length (extreme), 595 ft. ; 7,100 tons; Speed, 33 knots.
Armament, 6—8-in. ; 4—4.7-in. A.A. ; 12 above-water 21-in. torpedo tubes;
1 catapult; 2 aircraft.
Correction to plan.—The tops of the funnels are square to the funnels.
The masts are raked.

JAPAN.

LIGHT CRUISERS.

"Sendai" Class.

Naka. Sendai. Jintsu.



Length (extreme), 535 ft. ; Speed, 33 knots ; 5,195 tons ; Completed, 1924-25.

Armament, 7—5.5-in. ; 2—3-in. A.A. ; 4 twin 21-in. torpedo tubes ;
1 seaplane ; 1 catapult.

Correction to plan.—Bows of Jintsu and Naka have been modified to give more flair.
Catapult fitted abaft mainmast which is of tripod construction and is fitted with a derrick.
Aircraft platform removed from forecastle.

(P103)

JAPAN.

LIGHT CRUISERS.

"Natori" Class.

Isudzu.
Nagara.

Natori.
Yura.

Kinu.
Abukuma.

"Kuma" Class.

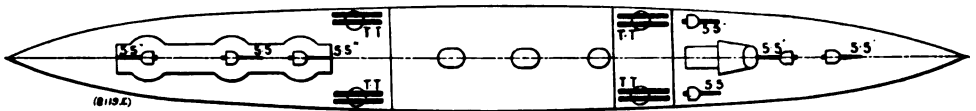
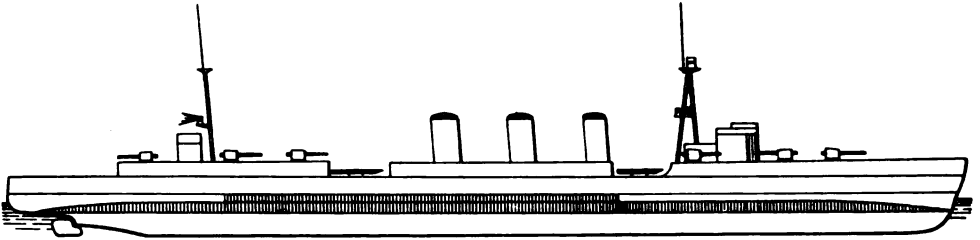
Oi.

Kiso.

Kitakami.

Tama.

Kuma.



Length (extreme), 535 ft. ; Length B.P., 500 ft. ; Speed, 33 knots ; "Kuma" Class, 5,100 tons ; "Natori" Class, 5,170 tons ; Completed, 1920-23.

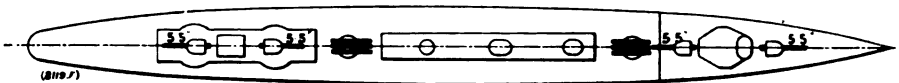
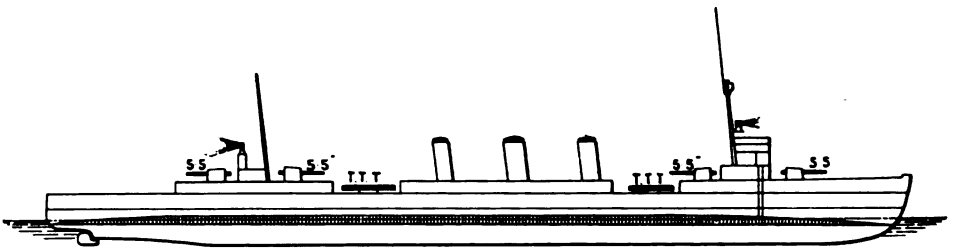
Armament, 7—5.5-in. ; 2—3-in. A.A. ; 2 M. ; 4 twin above-water 21-in. torpedo tubes ; 1 catapult ; 1 aircraft. Fitted for minelaying.
Corrections to plan.—Catapult fitted before mainmast, which is of tripod construction and is fitted with a derrick.

LIGHT CRUISERS.

"Tenryu" Class.

Tatsuta.

Tenryu.



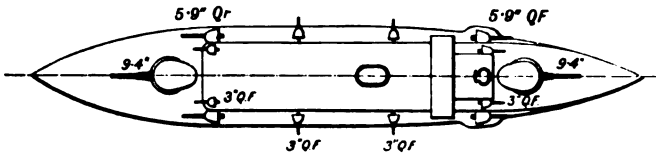
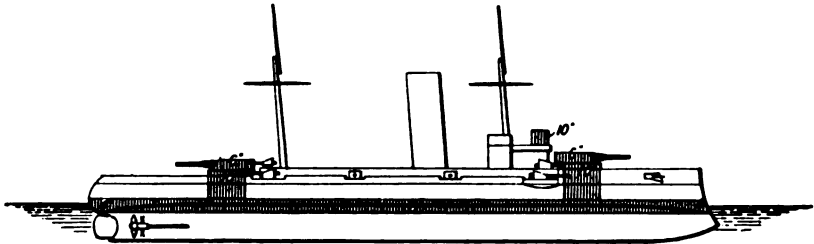
Length (extreme), 468 ft. ; Speed, 31 knots ; 3,230 tons ; Completed, 1919.
Armament, 4—5.5-in. ; 1—3-in. A.A. ; 2 M. ; 2 triple above-water torpedo tubes.
Fitted for Minelaying.

(P104)

NETHERLANDS.

COAST DEFENCE SHIP.

Hertog Hendrik.

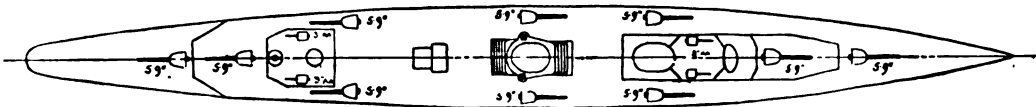
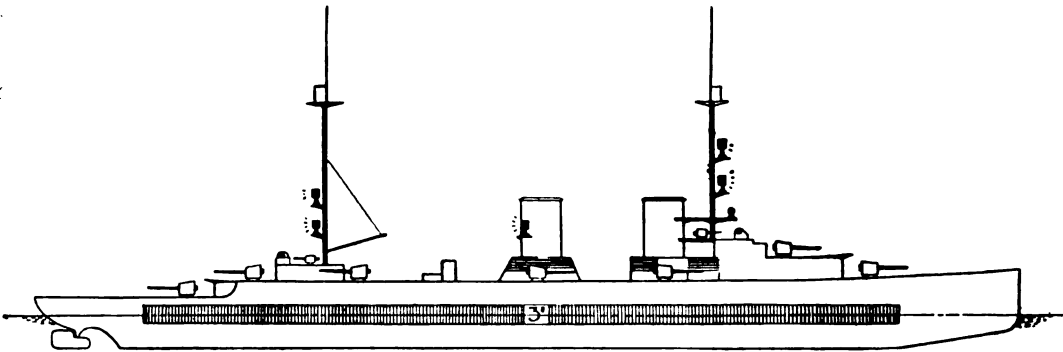


Hertog Hendrik: Length, 317 ft.; 4,871 tons; Speed, 16½ knots; Completed, 1908.
Armament, 1—9' 4-in.; 4—5' 9-in.; 2—3-in.; 6—1 pr.; 2 M.
After gun removed.

NETHERLANDS.

CRUISERS.

Java. Sumatra.



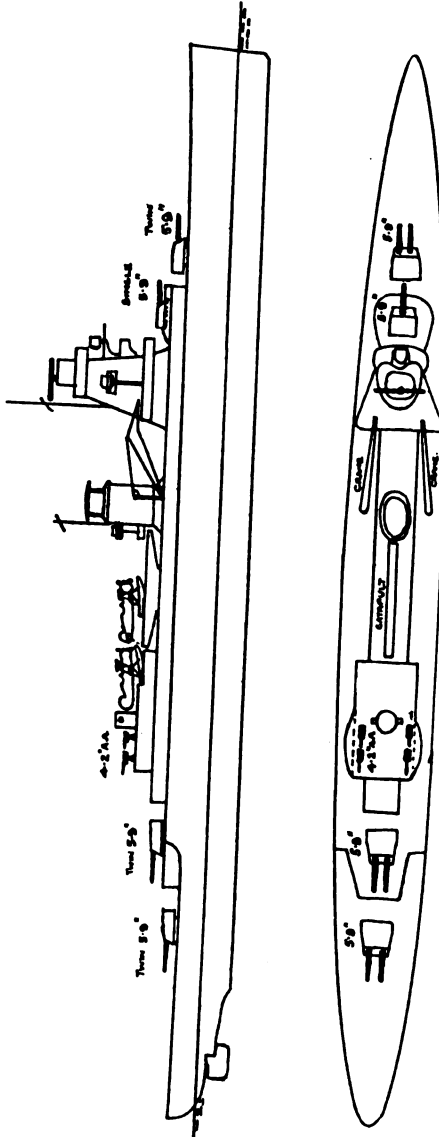
Length, 509½ ft.; 6,670 tons; Speed, 31 knots; Completed, 1925-26.
Armament, 10—5' 9 in.; 6—1' 5 in.; 4—2 pr.; 8 M.;
40 mines; 2 seaplanes

Corrections to plan.—These cruisers have been reconditioned. The 4—3-in.A.A. have been removed. The mainmast has been shortened, moved forward, and fitted with derrick and searchlights. Main topmast removed. 3—4-cm machine guns have been fitted each side of the after deck house. The forward 4-sided 5' 9-in. have been raised a deck to the signal deck, which has been extended aft for the purpose. Fore topmast shortened and foremast made larger. Cranes fitted abreast foremost funnel. Aircraft stowed between funnels.

NETHERLANDS.

CRUISER.

De Ruyter.



Length (extreme), 560 ft.; 6,450 tons; Speed, 33 knots.
Armament, 7-5.9-in.; 10-1.5-in. A.A.; 8-5-in. A.A.; 4 M.G.; 1 catapult; 2 seaplanes.
Completed, 1896.

Correction to plan.—Funnel top modified.

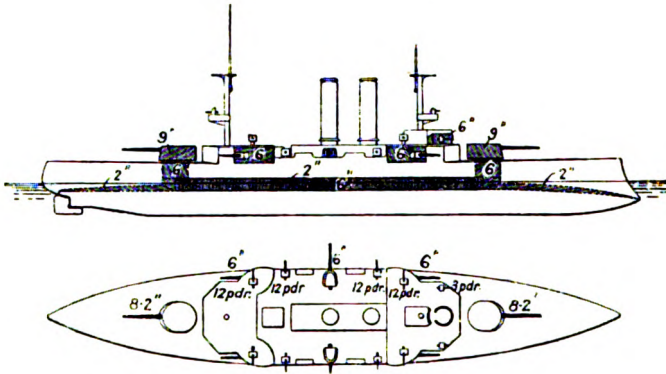
(P106)

NORWAY.

COAST DEFENCE SHIPS.

Norge.

Eidsvold

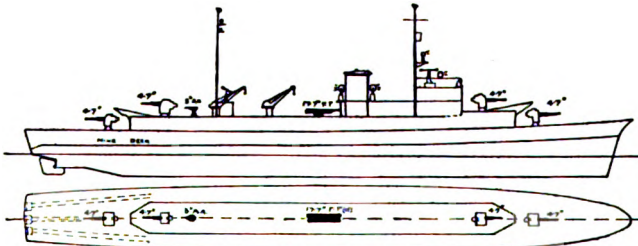


Length, 310½ ft. ; 4,166 tons ; Speed, 16·5 knots ; Completed, 1901.
Armament, 2—8·2-in. ; 6—5·9-in. ; 8—3-in. ; 2—3-pr. ; 2 submerged 18-in. torpedo tubes.
Correction to plan.—Derrick fitted on fore side of mainmast.

NORWAY.

MINELAYER AND TRAINING SHIP.

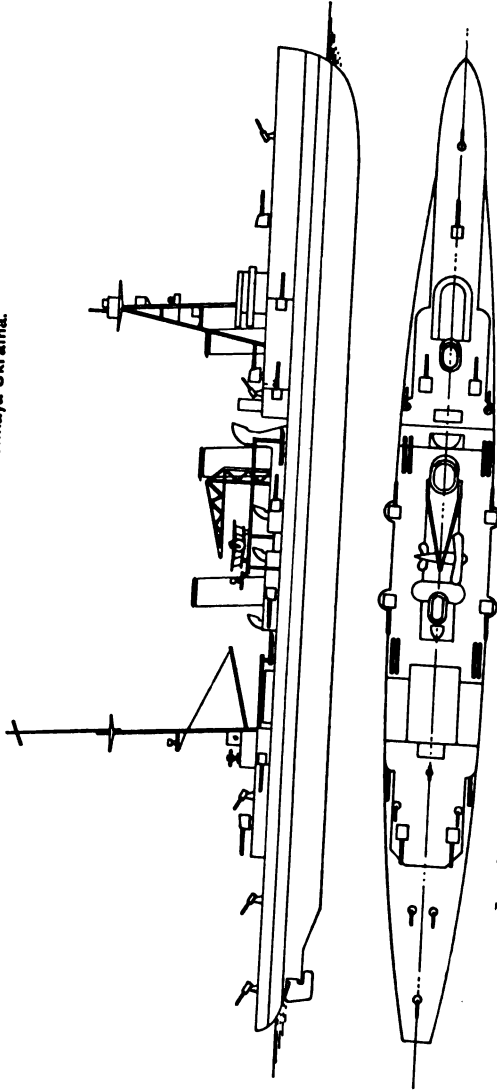
Olav Trygvason.



Length, 319½ ft. ; 1,747 tons ; speed, 21½ knots ; Completed, 1934.
Armament, 4—4·7-in. ; 1—3-in. A.A. ; 2—17·7-in. torpedo tubes.
280 mines.
Correction to plan.—Both cranes are fitted abreast the mainmast.

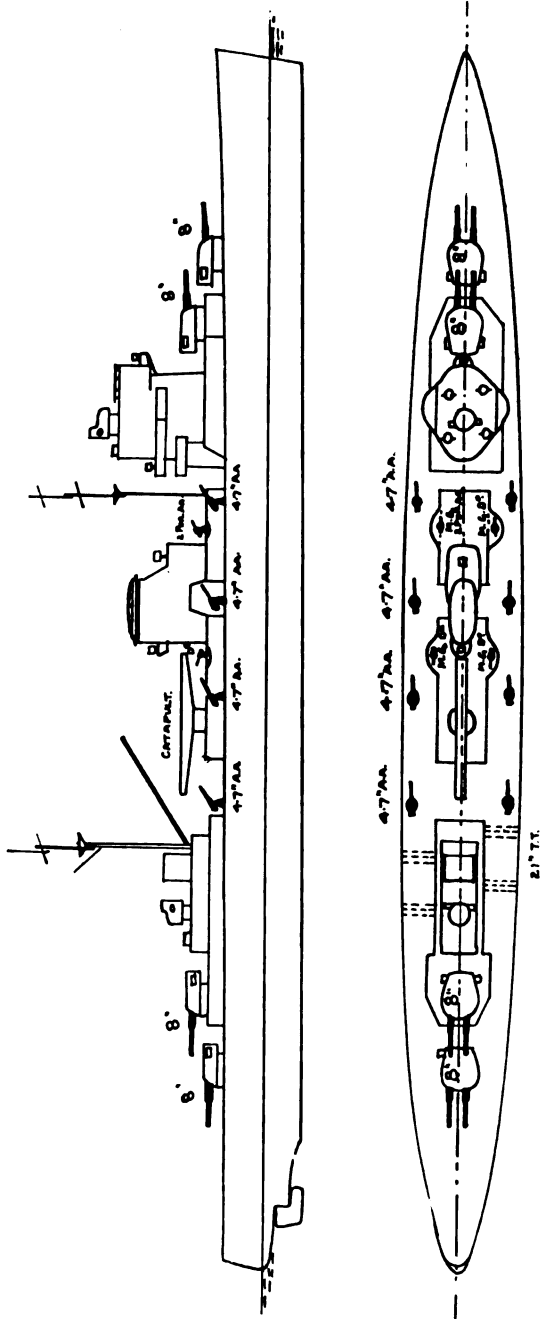
SOVIET UNION.
CRUISERS.

Profintern.
Chervonnaya Ukraina.



Length, 507 ft. 9 ins. ; Displacement, 7,600 tons ; Speed, 29½ knots ; Completed, 1924-25.
Armament, 16-5.1-in. ; 4-4-in. ; 4-3-in. A.A. ; 4 M. ; 12-21-in. torpedo tubes ; 100 mines ; 2 seaplanes.

SPAIN.
CRUISER.
Canarias.



Length (extreme), 688 ft. ; 10,000 tons ; 33 knots ; Completed, 1886.
Armament, 8—8-in. ; 8—4-7-in. A.A. ; 8—2-pr. A.A. ; 12—21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Main topmast removed.

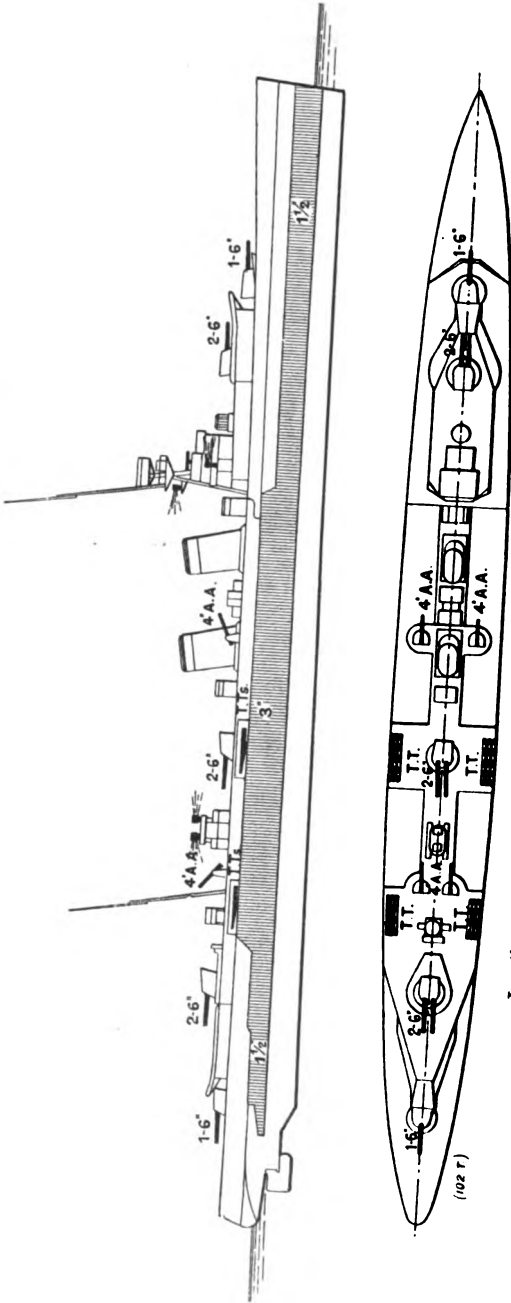
SPAIN.

CRUISE 8.

Libertad (ex-Principe Alfonso).

Almirante Cervera.

Miguel de Cervantes.



Length (extreme) 570 ft. 6 in.

Armament, 8-6-in. ; 4-4-in. A.A. ; 2-3 dr. ; 4 triple-b.

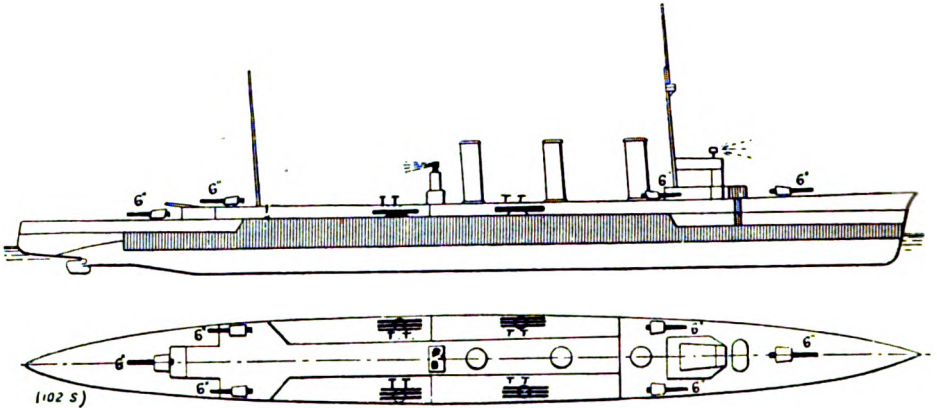
Corrections to plan.—The mainmast is tripod. Fore topmast and foremast are 21-in. torpedoes. Fore topmast and foremast are 21-in. torpedoes. Fore topmast and foremast are 21-in. torpedoes.

(P110)

SPAIN.

LIGHT CRUISER.

Mendez Nuñez.



Length (extreme), 462 ft. ; Length B.P., 439 ft. ; 4,509 tons ; Speed, 29 knots. Completed, 1924.
Armament, 6—6-in. ; 4—3-pr. A.A. ; 4 M. ; 4 above-water triple torpedo tubes (21-in. torpedoes).

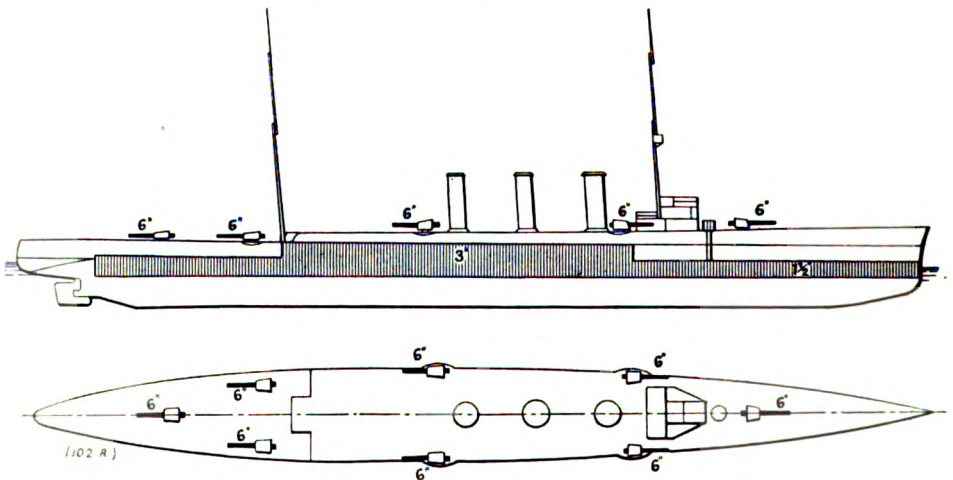
NOTE.—The armour belt is 3 ins. thick, tapering to 1½ ins. at the ends.

Corrections to plan.—The foremast is tripod. Fore topgallant mast is fitted.

A.A. Armament is fitted between second funnel and mainmast. Searchlight platform added round after funnel.

LIGHT CRUISER.

Navarra (*ex-Republica, ex-Reina Victoria Eugenia*).



Length (extreme), 462 ft. ; 4,857 tons ; Speed, 25½ knots ; Completed, 1923.

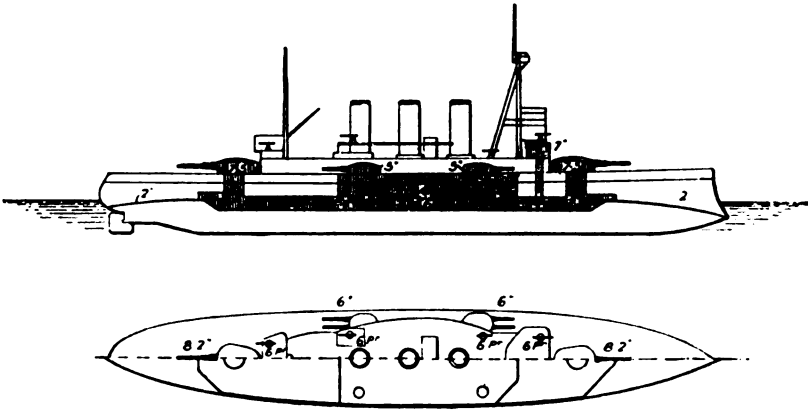
Armament, 6—6-in. ; 4—3-pr. A.A. ; 4 M. ; 1 L. ; 4—21-in. torpedo tubes.

Corrections to plan.—Foremost funnel and masts removed. Tower built in place of foremast and superstructure built in place of mainmast and fitted with pole masts. A.A. Armament fitted in way of funnels. Upper deck extends further aft.

SWEDEN.

BATTLESHIP.

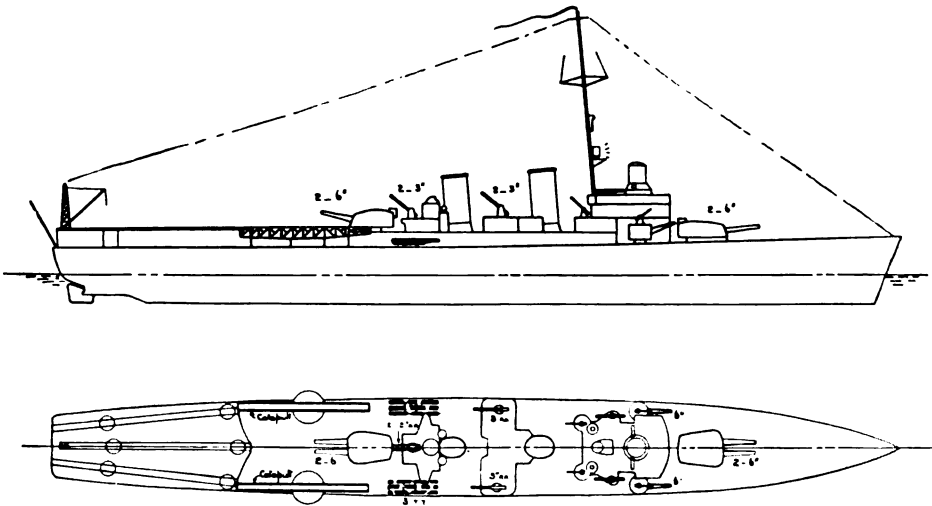
Oscar II.



Length, 318·6 ft. ; 4,250 tons ; Speed, 18 knots ; Completed, 1907.
 Armament, 2—8·3-in. ; 8—5·9-in. ; 8—6-pr. ; 1—1-pr. ; 2 submerged 18-in. torpedo tubes.
 Searchlights fitted on foremast and mainmast.

AIRCRAFT CRUISER.

Gotland.

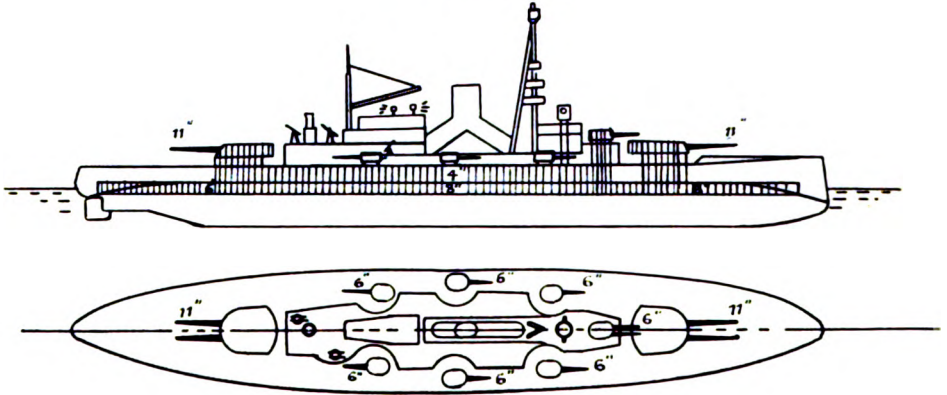


Length, 442 ft. ; 4,700 tons ; 33,000 H.P. ; Speed, 27 knots ; Completed, 1934.
 Armament, 6—6-in. ; 4—3-in. A.A. ; 4 M. ; 6—21-in. torpedo tubes ; 1 catapult ; 8 seaplanes
 Correction to plan.—1 catapult is fitted on middle line.

SWEDEN.

COAST DEFENCE SHIPS.

Gustav V. Sverige.
(As reconstructed 1924-29.)



Length, 396.7 ft. ; Sverige, 6,899 tons ; Gustav V, 7,100 tons ; Speed, 23 knots ; Completed, 1917-21.

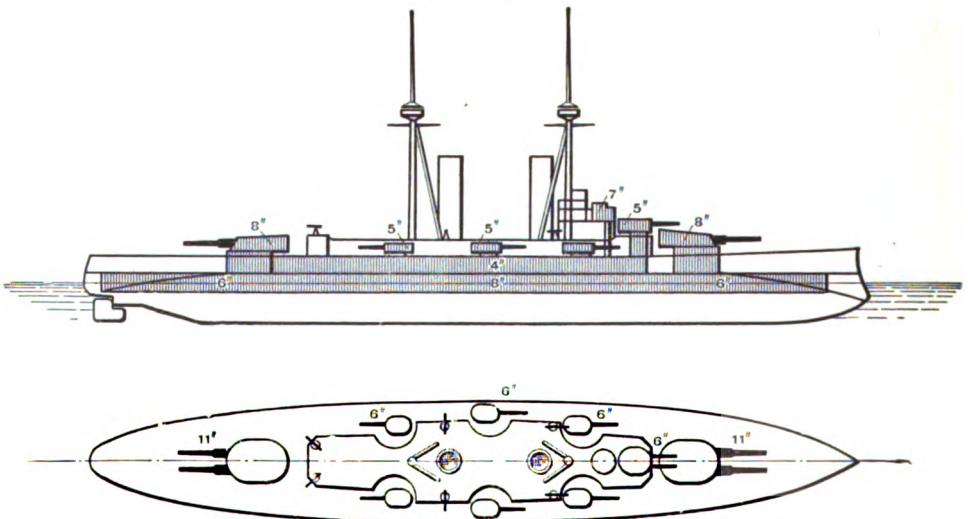
Armament, 4—11-in. ; 8—5.9-in. ; 4—3-in. ; 2—6-pr. ; 6 M.

Correction to plan.—Fore topmast added. Bridgework extended. Mainmast removed. In Sverige the mainmast is shortened ; two funnels are fitted, the after one being vertical and the forward one bent.

SWEDEN.

COAST DEFENCE SHIP.

Drottning Victoria.



Length, 396.7 ft. ; 6,899 tons ; Speed, 23 knots ; Completed, 1921.

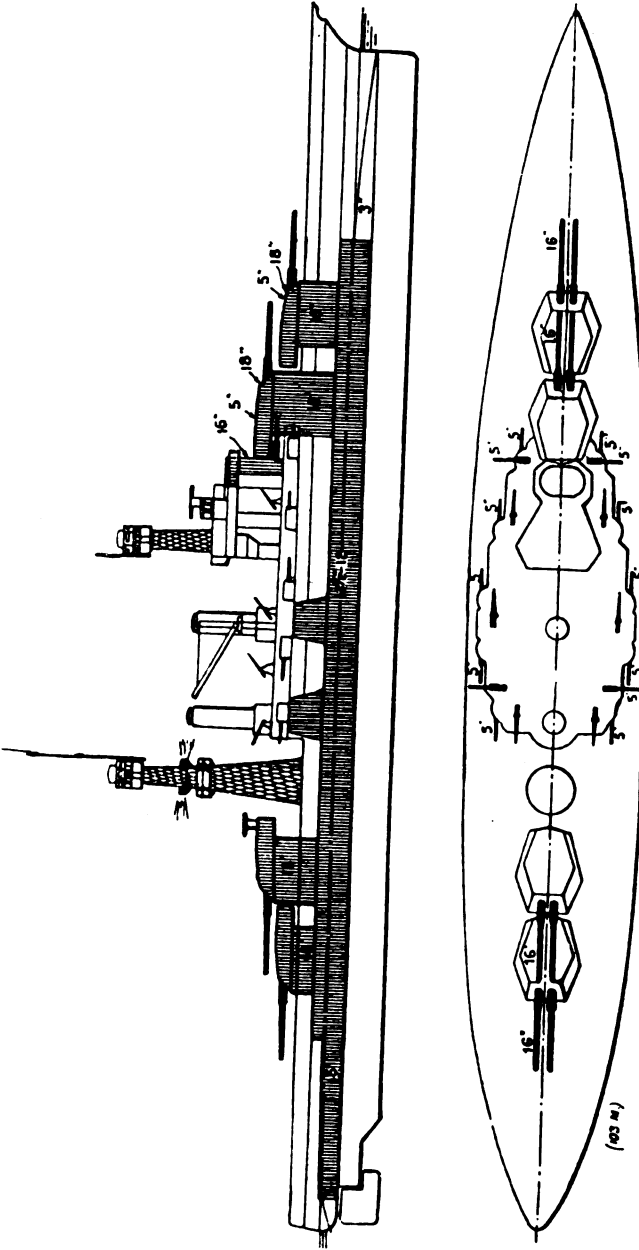
Armament, 4—11-in. ; 8—5.9-in. ; 4—3-in. ; 2—6-pr. ; 9 M.

Mainmast removed and bridgework modified. Searchlight platform and A.A. guns fitted abaft after funnel.

UNITED STATES.

BATTLESHIPS.

Colorado. Maryland West Virginia.



Length (extreme), 624 ft. ; Length W.L., 600 ft. ; Speed, 21 knots ; 31,600-32,500 tons ; Maryland, completed, 1921 ; Colorado and West Virginia, completed, 1923.

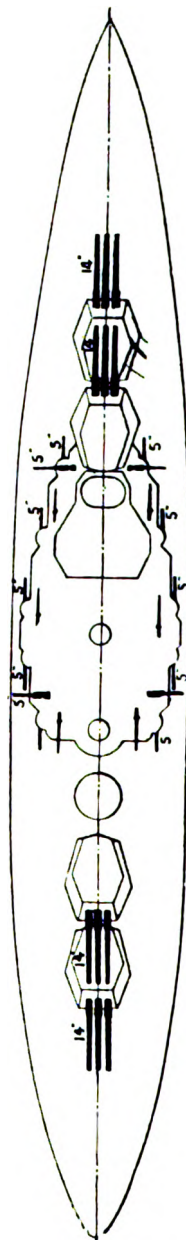
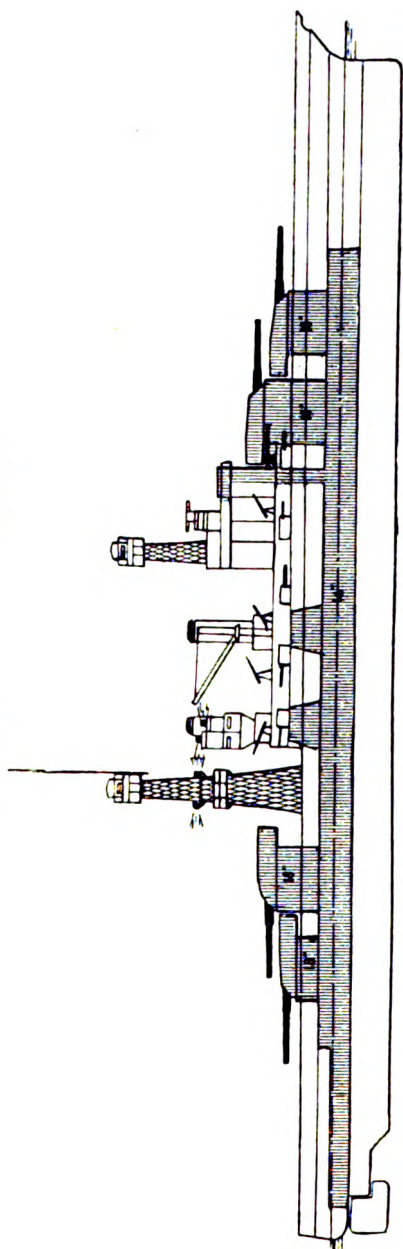
Armament, 8—16-in. ; 12—5-in. A.A. ; 4—6-pr. ; 2—1-pr. ; 2 submerged 21-in. torpedo tubes ; 2 catapults ; 3 aircraft. Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. Main topgallant mast removed. Range finder fitted on B turret of Maryland.

UNITED STATES.

BATTLESHIPS.

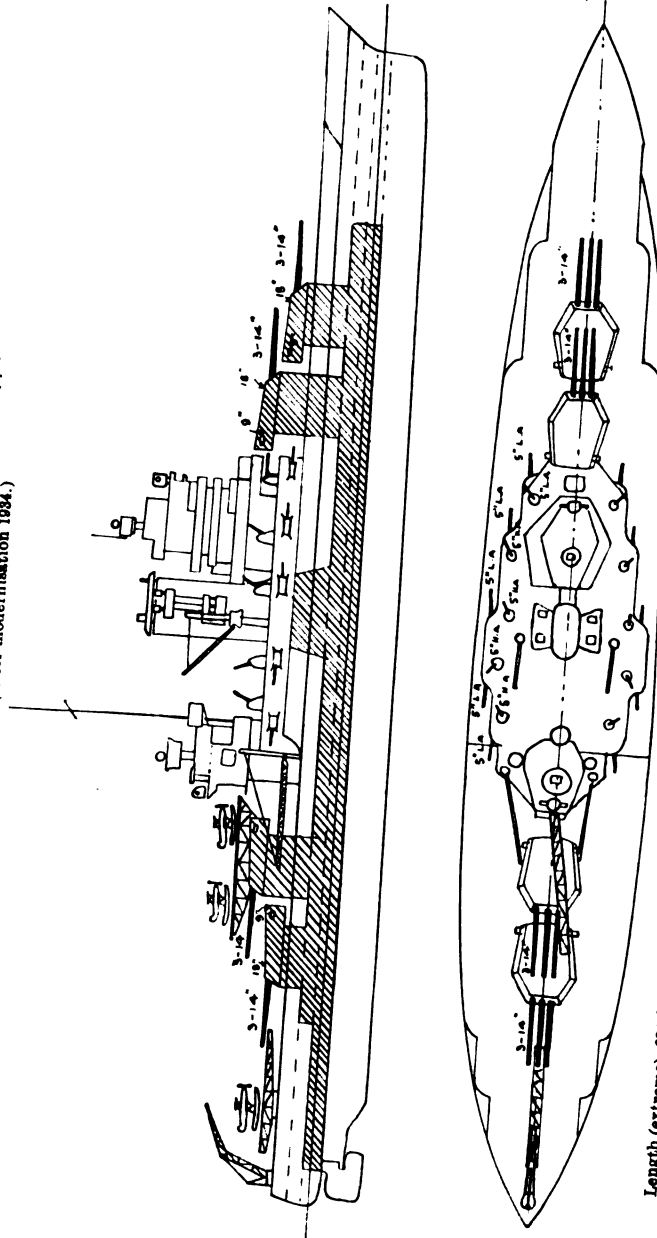
California.

Tennessee.



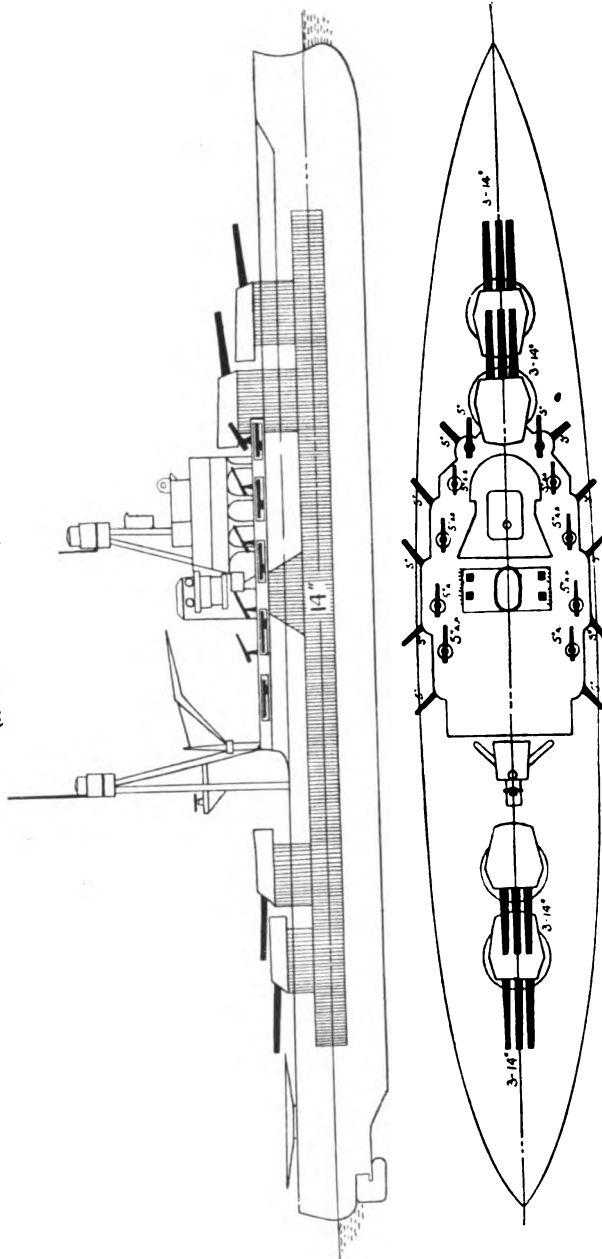
Length (extreme), 624 ft. ; Length W. L., 600 ft. ; Speed, 21 knots ; 32,600-38,300 tons ; Completed, 1920-21.
 Armament, 12-14-in. ; 12-5-in. ; 8-5-in. A.A. ; 4-6-pr. ; 2-1
 2 catapults (one right aft on quarter deck and one at X. turret) ; 3 seaplanes.
 Main topmast shortened. Crane at stern.

UNITED STATES.
BATTLESHIPS.
New Mexico.
(After modernization 1934.)
Idaho. Mississippi.



Length (extreme), 624 ft. ; Length, W. L., 600 ft. ; Speed, 22½ knots ; 33,000 tons : Idaho and New Mexico, 33,400 tons ; Completed, 1917-19 ; Modernised, 1931-4. Armament, 12-14-in. ; 12-6-in. ; 8-6-in. A. A. ; 4-6-pr. (Idaho, 4-3-pr.) ; 2-1-pr. ; 2 submerg. d 21-in. torpedo tubes. 2 catapults ; 3 seaplanes.

UNITED STATES.
BATTLESHIPS.
Arizona. Pennsylvania.
(As reconstructed 1931.)



Length (extreme), 608 ft.; Length B.P., 596 ft.; Speed, 21 knots; Pennsylvania, 33,100 tons; Arizona, 32,400 tons; Completed, 1916.
Armament, 12-14-in.; 13-6-in. A.A.; 4-3-pr.; 2-1-pr.; 2 M.; 2 L.; 2 catapults; 3 aircraft.
Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. Main copmast is on fore side of mast structure.

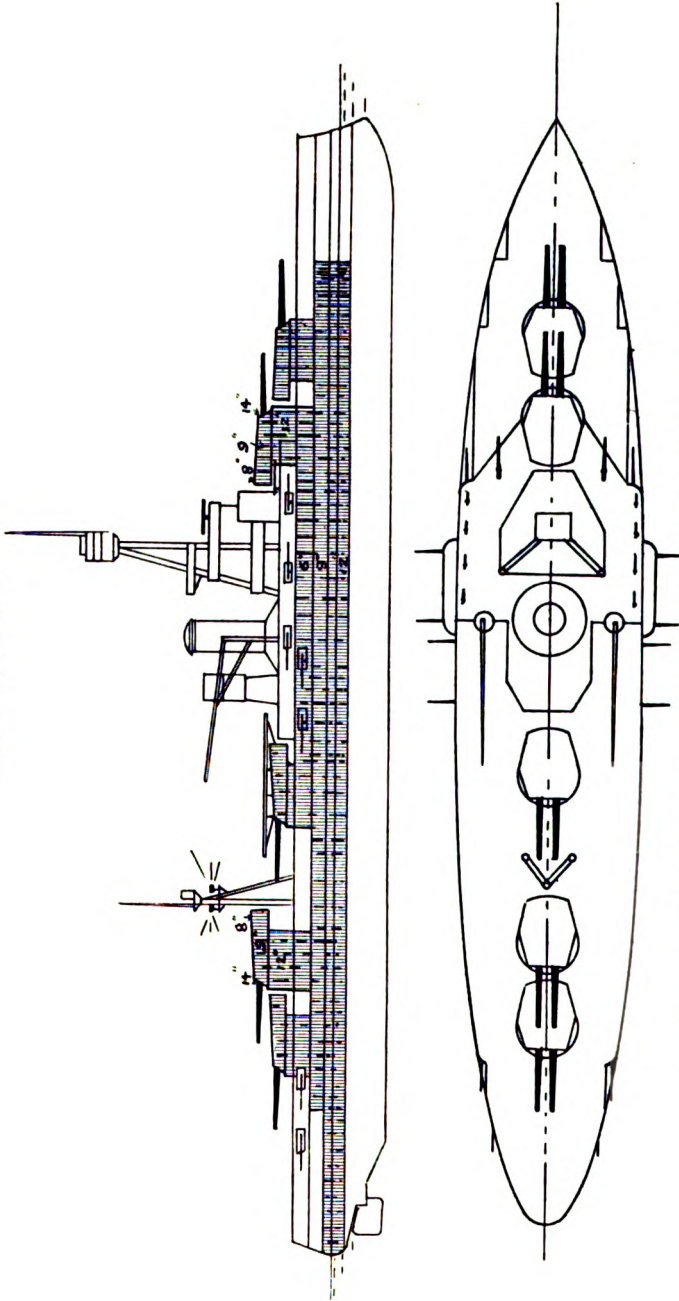
UNITED STATES.

BATTLESHIPS.

New York.

Texas.

(As reconstructed 1927.)



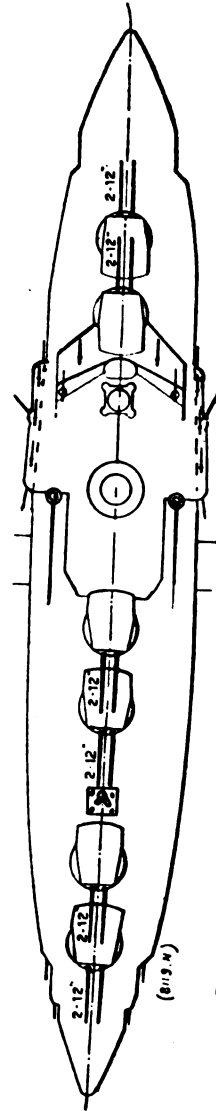
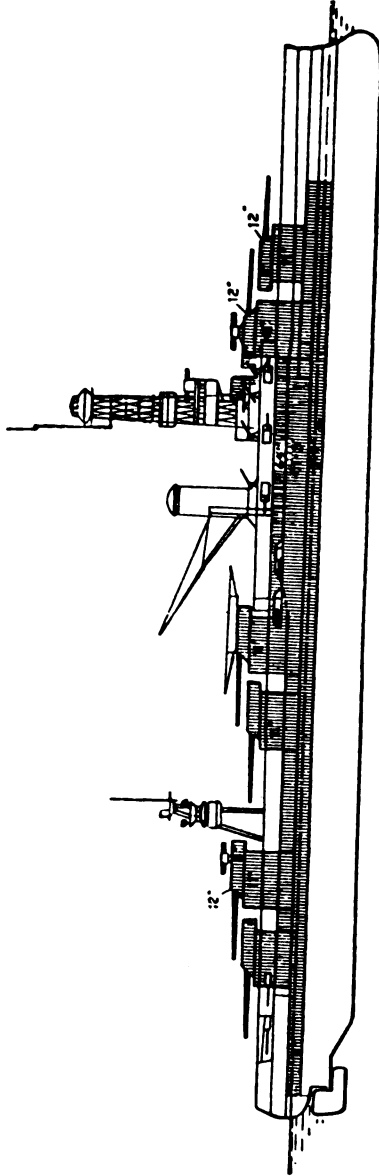
Length (extreme), 573 ft. ; Length W. L., 566 ft. ; Speed, 21 knots ; 27,000 tons ; Completed, 1914.
 Armament, 10-14-in. ; 16-6-in. ; 8-3-in. A.A. ; 4-3-pr. ; 2-1-pr. ; 8 m. ; 1 catapult ; 3 aircraft.
 Corrections to plan. — Fore topmast removed, mast heads modified. Main mast head fitted with machine guns.
 Range finders fitted on "B" and "X" turrets.

UNITED STATES.

BATTLESHIP.

Arkansas.

(As reconstructed 1927.)



Length (extreme), 562 ft. ; Length, W.L., 555 ft. ; Speed, 20.5 knots ; 26,100 tons ; Completed, 1912. Armament, 12-12-in. ; 16-6-in. ; 8-8-in. A.A. ; 4-3-pr. ; 2-1-pr. ; 2 M. ; 1 catapult ; 3 aircraft.

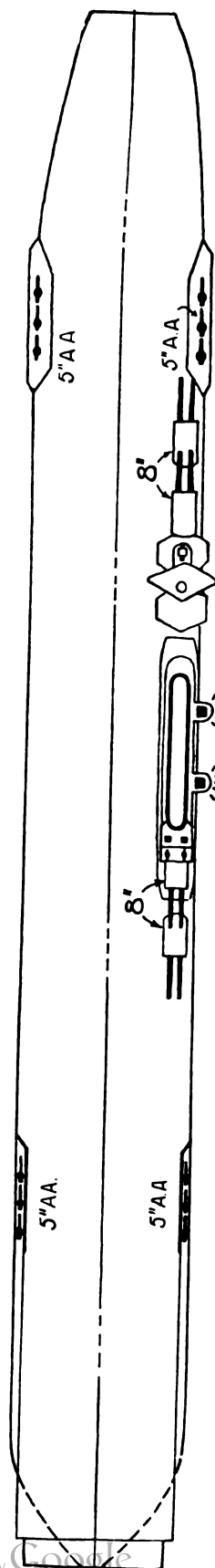
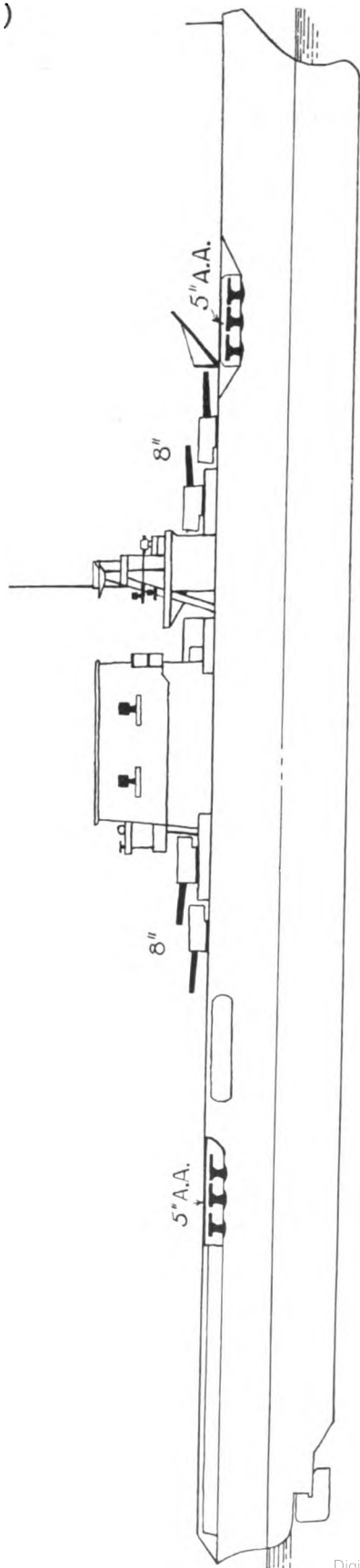
Wyoming, a sister ship, has been demilitarised and converted to a training ship.

UNITED STATES.

AIRCRAFT CARRIERS.

Lexington.

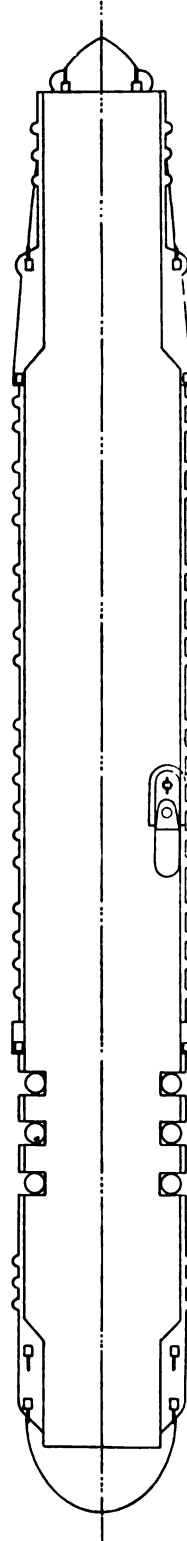
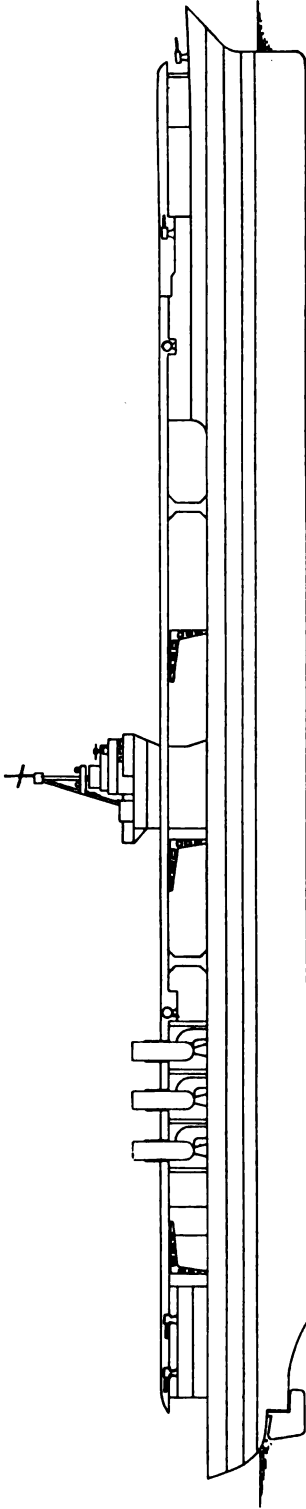
Saratoga.



Length (extreme), Lexington, 880 ft. ; Saratoga, 888 ft. ; 33,000 tons ; Speed, 33.9 knots ; Completed, 1927.
 Armament, 8—8-in. ; 12—6-in. A.A. ; 4—6-pr. ; Operate about 80 aircraft ; 1 catapult.
 Correction to plan.—Lexington has platform round top of funnel.

UNITED STATES.
AIRCRAFT CARRIER.

Ranger.

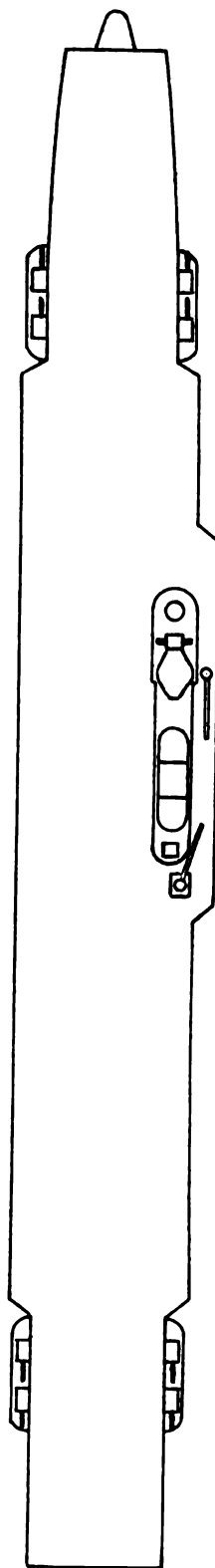
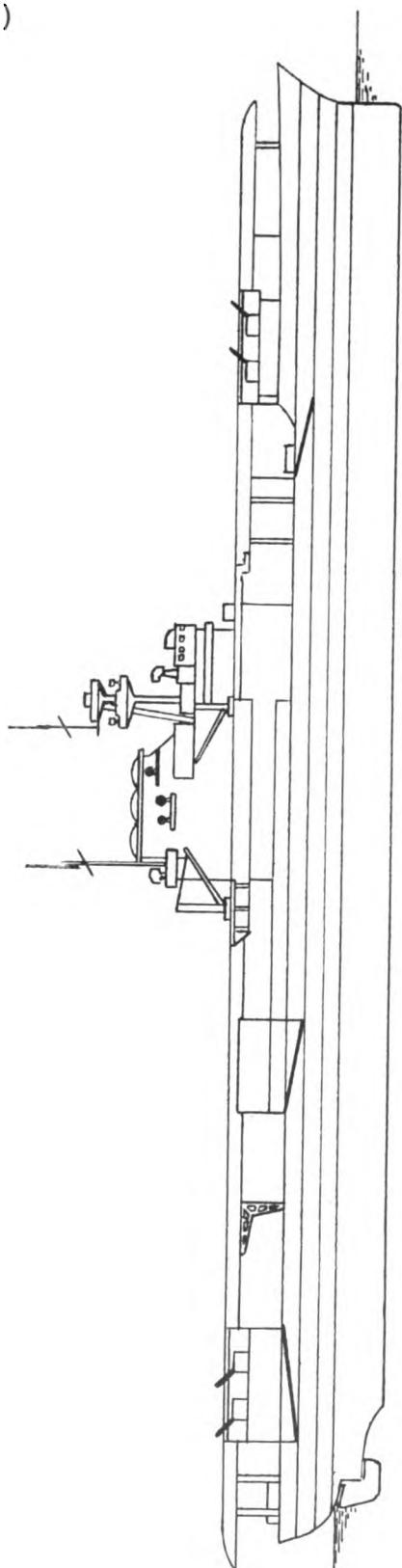


Length (overall), 769 ft.; Length W.L., 729 ft.; Displacement, 14,500 tons; Speed, 20½ knots.

Armament, 8—5-in. A.A.; 50 M.G.; 76 aircraft.

NOTE.—The funnels can be swung outboard.

UNITED STATES.
AIRCRAFT CARRIERS.
Enterprise. Yorktown.

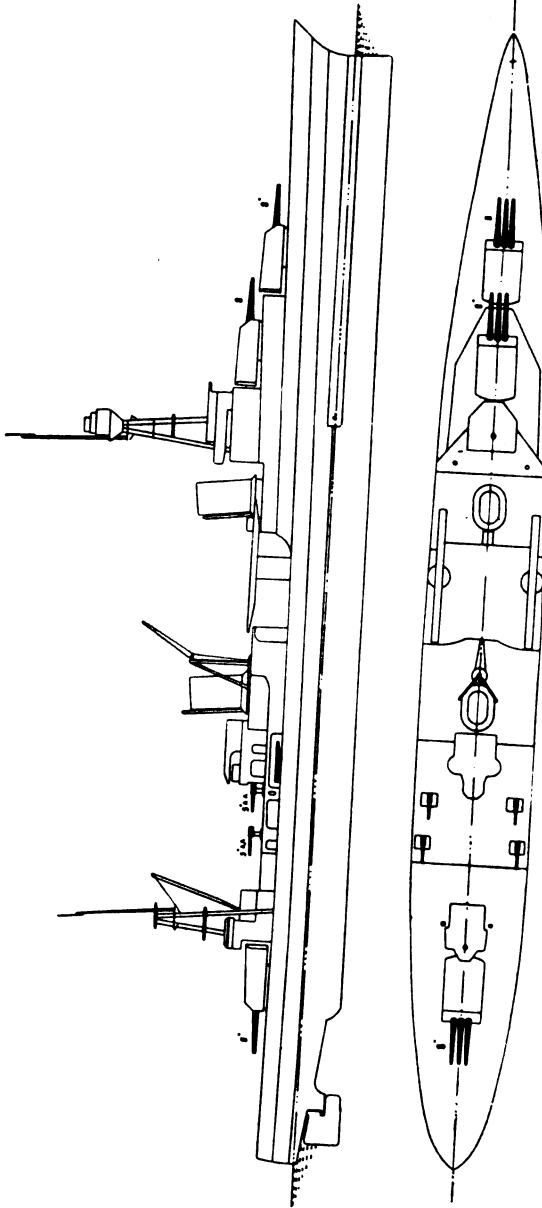


Length (on W.L.), 761 ft. ; 19,900 tons ; Speed, 24 knots ; Completed 1936.
Armament, 8—5-in. A.A. ; 16 smaller guns ; 100 aircraft.

UNITED STATES:

CRUISERS.

Northampton.	Chester.	Louisville.	Chicago.	Houston.	Augusta.
		("Chester" Class.)			("Augusta" Class.)



"Chester" and "Augusta" Classes: Length (extreme) 600 ft.; 9,060-9,300 tons; Speed, 32.5 knots; Completed, 1930-31. Armament, 9-8-in.; 4-5-in. A.A.; 2-3-pr.; 2 triple 21-in. torpedo tubes; 2 catapults; 4-8 seaplanes. Corrections to plan.—Fore topmast shortened, topgallant masts removed. Foremost funnel lengthened in "Chester" Class.

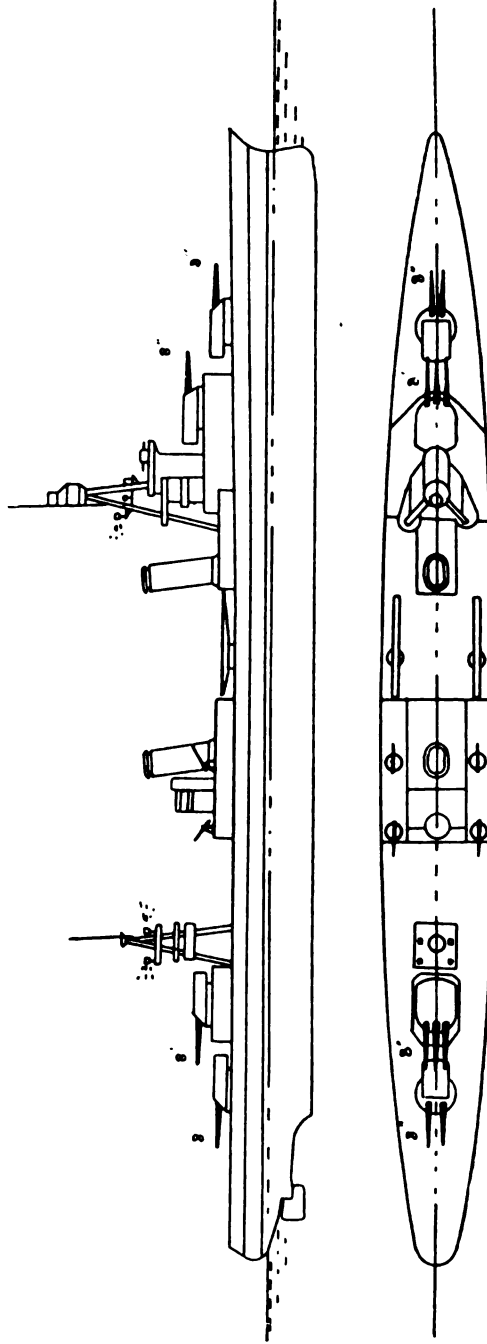
UNITED STATES.

CRUISERS,

"Pensacola" Class.

Salt Lake City.

Pensacola.



Length (extreme), 585½ ft. ; 9,100 tons ; Speed, 32.7 knots ; Completed, 1930.
Armament, 10-8-in. ; 4-6-in. A.A. ; 2-8-pr. ; 2 triple 21-in. torpedo tubes ;
2 catapults ; 4 seaplanes.

Corrections to plan.—Crane fitted on fore side of after funnel and derricks fitted on after side.

UNITED STATES.

SCOUT CRUISER8.

"Omaha" Class.

Cincinnati.

Concord.

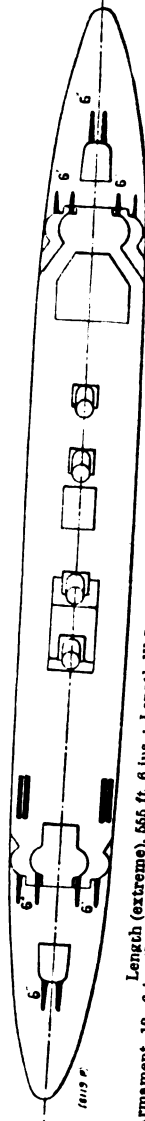
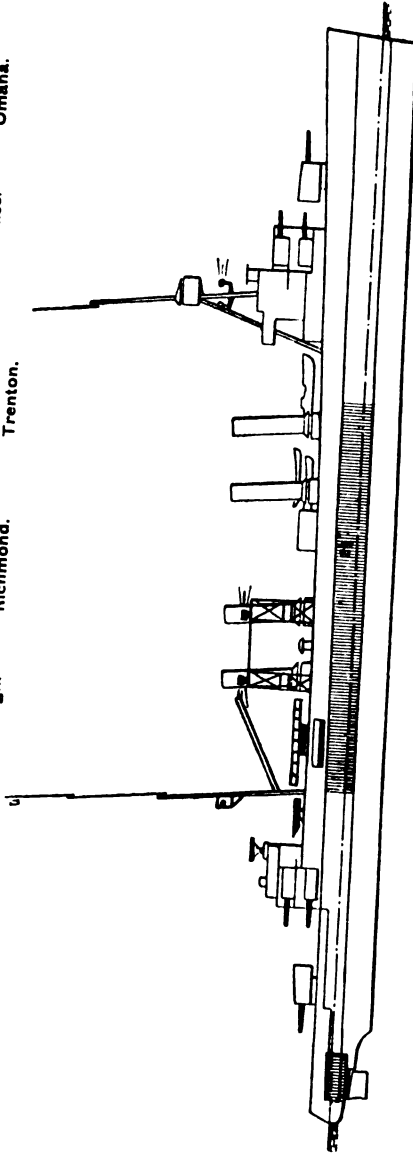
Detroit.
Raleigh.

Marblehead.
Richmond.

Memphis.
Trenton.

Milwaukee.

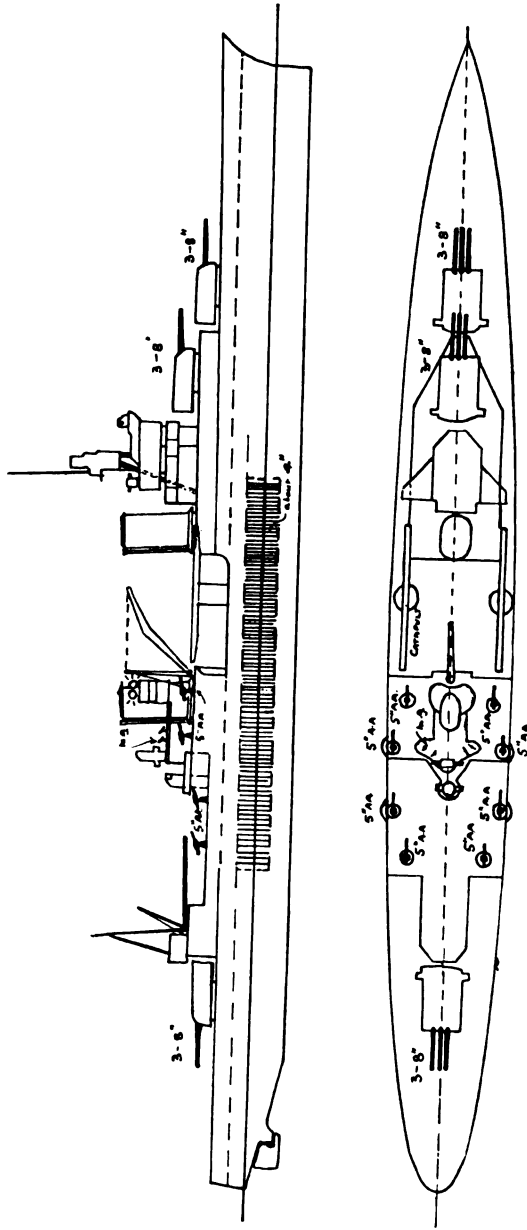
Omaha.



Length (extreme), 565 ft. 6 in.; Length W. L., 550 ft.; Speed, 33.7 knots; 7,050 tons; Completed in 1923-25
Armament, 12—6-in. (Marblehead, 11—6-in.; Cincinnati, Detroit, Raleigh and Richmond, 10—6-in.); 21-in. torpedoes; 2 catapaults; 2 catapults; 2 aeroplanes; 30 mines, 4—3-in. A.A.; 2—3-pr.; 2 triple above-water
Corrections to plan.—The pair of single 6-in. guns at upper deck level aft are removed in Marblehead, Cincinnati, Detroit, Raleigh and Richmond
In Marblehead there is a single gun on top of the after butte. Topgallant masts removed and topmasts shortened.
Foremast head in Marblehead fitted with machine guns.

UNITED STATES CRUISERS.

Indianapolis, Portland.

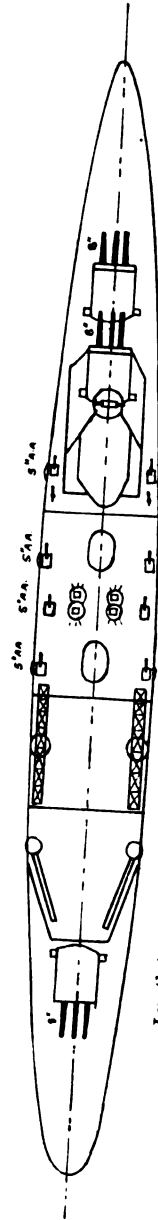
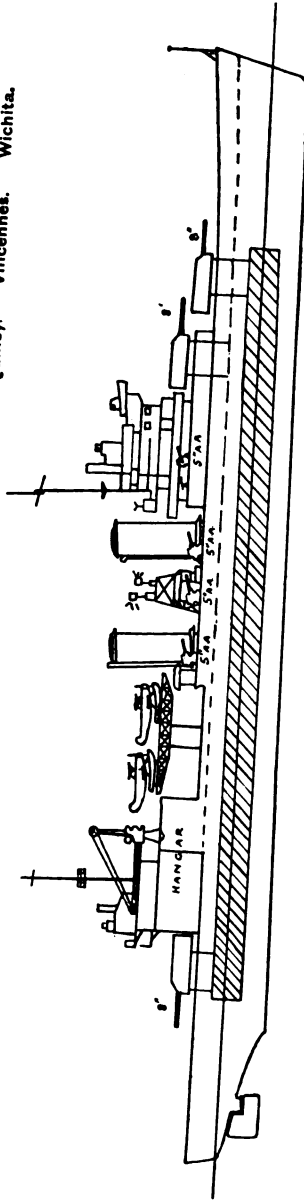


Length (extreme), 610 ft. 3 in.; Indianapolis, 584 ft. on W.L.; Portland, 582 ft. on W.L.; Indianapolis, 9,950 tons; Portland, 9,800 tons; Speed, 32.7 knots. Completed, 1932-1933. Armament, 9-8-in., 8-5-in. A.A.; 10 machine guns; 2 catapults; 4-6 aircraft; 2-3-pdr. Corrections to plan.—Fore topmast is raked. Foremost funnel lengthened.

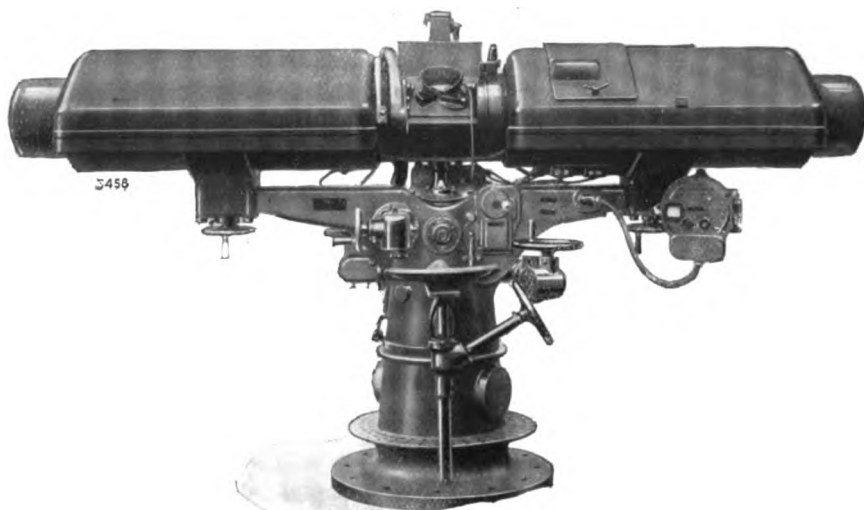
UNITED STATES.
CRUISERS.

"Astoria" Class.

Astoria. New Orleans. San Francisco. Minneapolis. Tuscaloosa. Quincy. Vincennes. Wichita.



Length (extreme), 588 ft.; on W. L., 574 ft.; 10,000 tons (estd.); Speed, 32.7 knots; Completed, 1934-36.
Armament, 9-8-in., 8-5-in., 2-3-pr., 10 smaller; 2 catapults; 4 aircraft.



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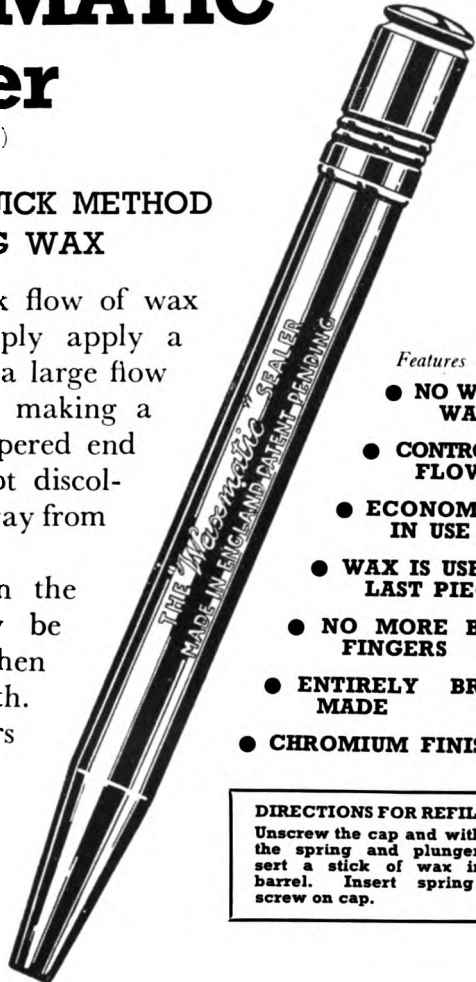
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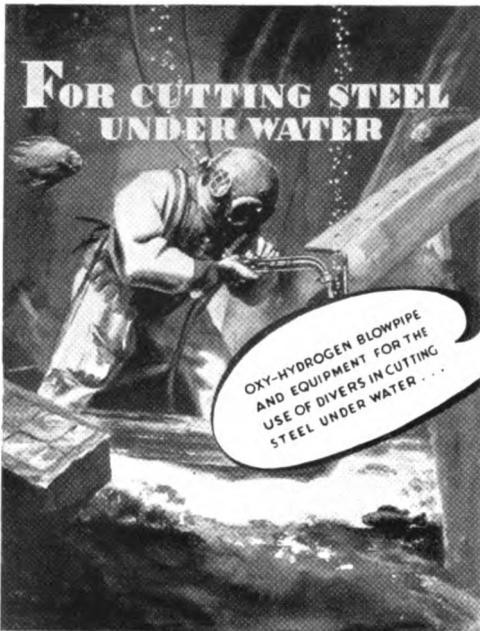
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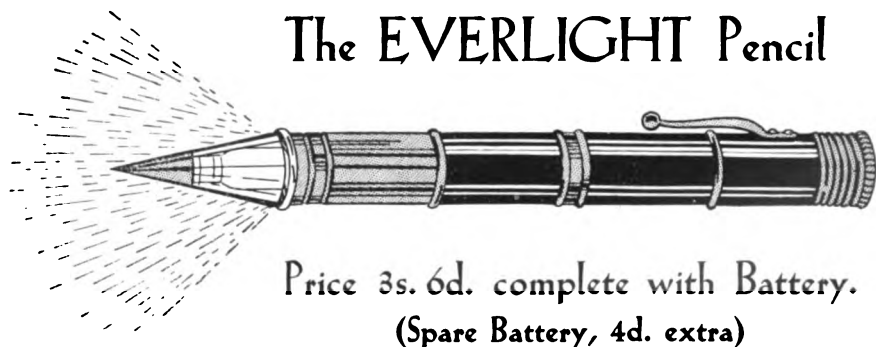
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A. = Argentina; B. = Brazil; C. = Chile; Col. = Colombia; D = Netherlands; De. = Denmark; F. = France; Fin. = Finland; G. = Greece; G.B. = Great Britain; Ger. = Germany; H. = Holland; I. = Italy; J. = Japan; N. = Norway; P. = Poland; Port. = Portugal; R.A.N. = Royal Australian Navy; S. = Spain; S.U. = Soviet Union; Sw. = Sweden; T = Turkey; U.S.A. = United States of America; Y.S. = Yugo Slavia.

a.a.cr. anti-aircraft cruiser; *a.cr.* armoured cruiser; *a.g.* armoured gunboat; *air.c.* aircraft carrier; *air.cr.* aircraft cruiser; *air.t.* aircraft tender; *a.s.* armoured ship; *a.t.* aviation transport; *b.* battleship; *b.cr.* battle cruiser; *c.d.* coast defence ship; *cr.* cruiser; *cr.m.l.* cruiser minelayer; *d.* destroyer; *f.c.d.* first-class destroyer; *f.d.t.b.* first-class torpedo-boat; *f.l.* flotilla leader; *g.t.s.* gunnery training ship; *l.cr.* light cruiser; *m.l. & t.s.* minelaying and training ship; *s.c.d.* second-class destroyer; *s.cr.* scout cruiser; *sea-p.c.* seaplane carrier; *tr. cr.* training cruiser.

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a.cr. armoured cruiser; *a.g.* armed gunboat; *air.c.* aircraft carrier; *air.cr.* aircraft cruiser; *a.s.* armoured ship; *a.t.* aviation transport; *b.* battleship; *b.cr.* battle cruiser; *c.d.* coast defence ship; *cr.* cruiser; *cr.m.l.* cruiser mine layer; *g.t.s.* gunnery training ship; *l.cr.* light cruiser; *m.l. & t.s.* mine layer and training ship; *s.cr.* scout cruiser; *sea-p.c.* seaplane carrier; *tr.cr.* = training cruiser.

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